Number 5
Volume XLVIII

FEBRUARY, 1915

$2.00 per year
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TEXTILE WORLD RECORD

A JOURNAL FOR MANUFACTURERS AND ALL OTHERS INTERESTED IN THE PROCESSES AND PRODUCTS OF TEXTILE MANUFACTURING

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Table of Contents Page 49 Buyers Index Page 147 Index to Advertisements Page 157

The TEXTILE-FINISHING MACHINERY CO.

Howard Building, Providence, R. I.

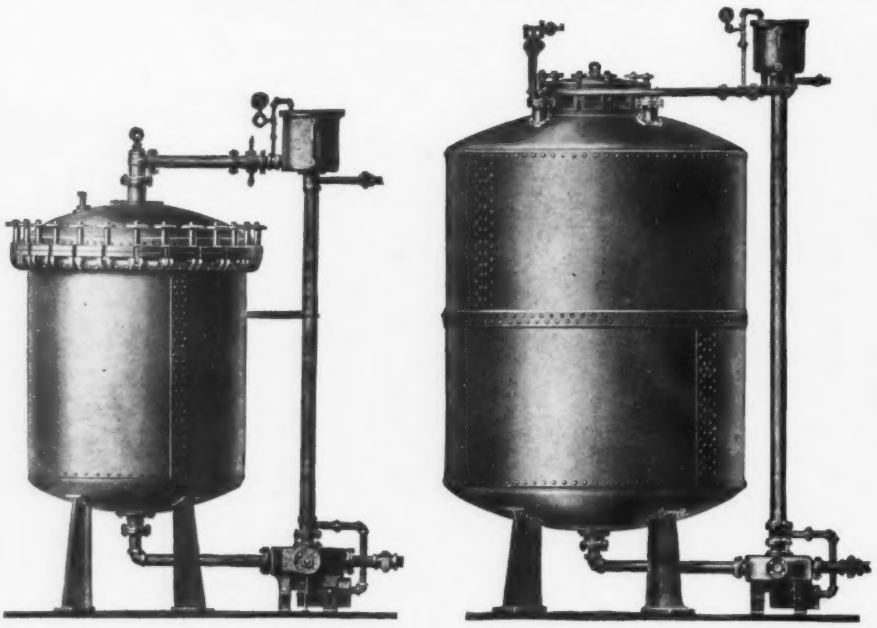
BUILDERS OF

Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing Machinery

FOR

TEXTILE FABRICS AND WARPS

Plans and Estimates for Complete Plants



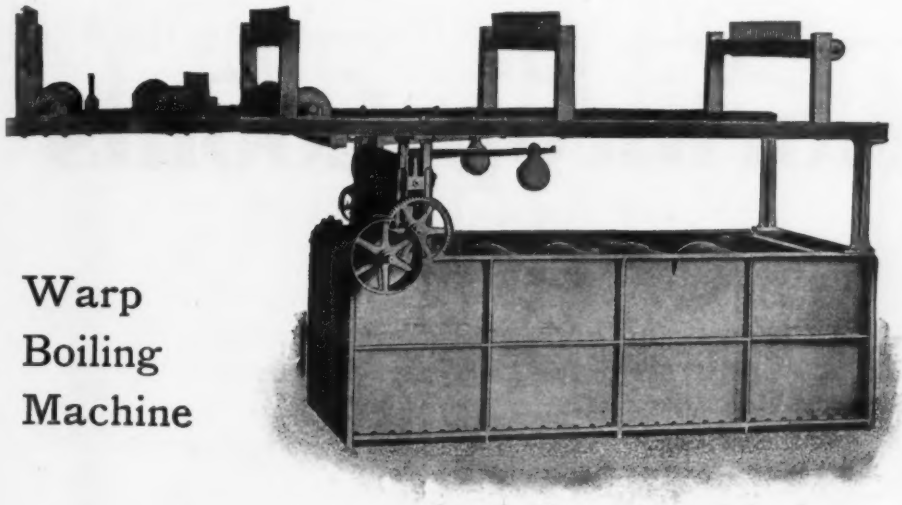
Kiers Fitted With Rusden Circulator and Super heater

The Rusden system is simple, effective and fool proof. It leaves the inside of the kier free for the goods, furnishes a better and more uniform circulation, with the use of less steam than any other system

Pressure and Open Boil Kiers of all kinds

FOR

Woven and Knit Goods, Yarn and Raw Stock



Warp
Boiling
Machine

Bleaching,
Dyeing,
Drying,
Finishing
Machinery

for all textile fabrics.

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

Providence Office, Room 417, Industrial Trust Building.

Northrop Looms

Trade Mark Registered

Increase product per loom

Increase wages per weaver

Reduce cost of weaving per yard

Pay for themselves in five years or less

Can You Afford to Do without them?

Draper Company

Hopedale Mass.

J. D. CLOUDMAN, Southern Agent, Atlanta, Ga.

THE BEST

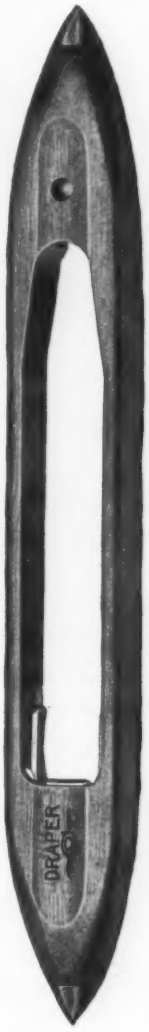
NORTHROP LOOM BOBBINS

AND

SHUTTLES

ARE MADE BY

Northrop Loom Manufacturers



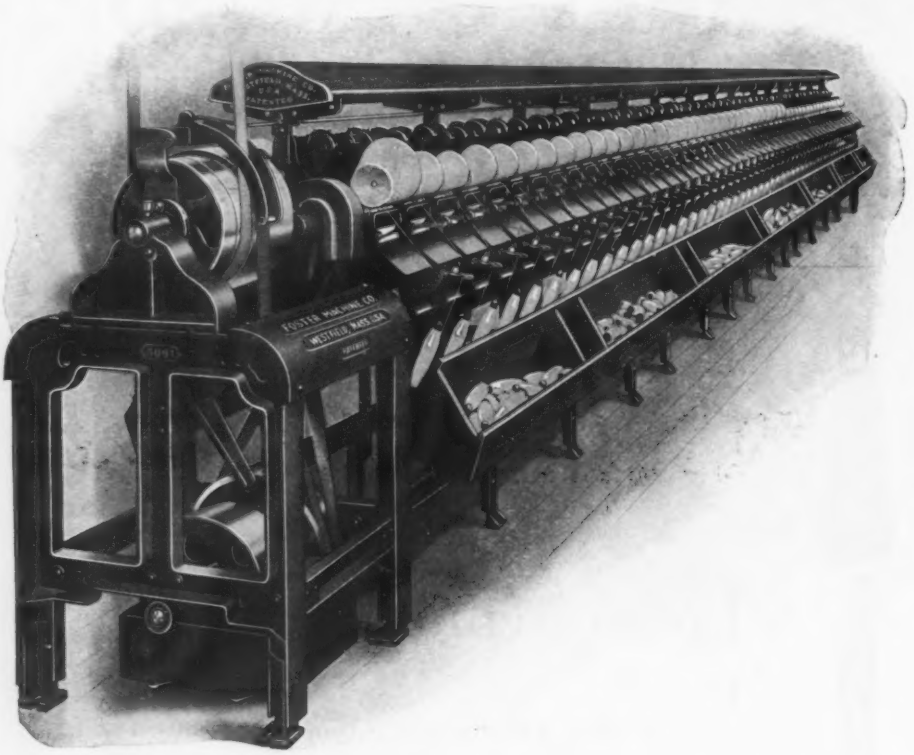
Look for our name on your Bobbins and Shuttles

DRAPER COMPANY

Hopedale Mass.

J. D. CLOUDMAN Southern Agent 40 So. Forsyth St. Atlanta Ga.

The Foster Model 30



The Model 30 Cone Winder has every good principle of former Models incorporated in it. In addition, the new Model is more flexible of adjustment and may be set to produce finished cones of much greater taper than former Models, although paper cones of the same or lesser pitch are used.

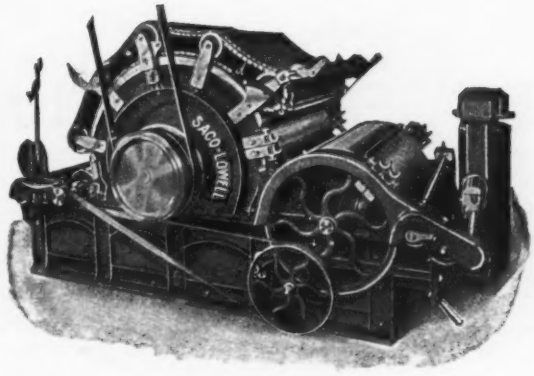
Foster Machine Company

Westfield, Massachusetts

JOHN HILL, Southern Agent, 1014 Healey Bldg., Atlanta, Ga.

Saco-Lowell Shops

TEXTILE MACHINERY



Shops—
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Biddeford, Maine
Newton Upper Falls, Mass.

Executive Offices—
77 Franklin Street
Boston, Mass.

Southern Agent, ROGERS W. DAVIS,
Charlotte, N. C.

COMPLETE COTTON MILL EQUIPMENT
Including:
Pickers
Cards
Drawing
Evener Drawing
Roving
Spinning
Twisters
Slashers
Spoolers
Reels
Winders
Warpers
Looms

WASTE RECLAIMING MACHINERY

WORSTED MACHINERY
Including:
Revolving Creels,
Gill Boxes
Drawing Frames,
Reducing and Roving Frames,
Cap Ring and Flyer Spinning and Twisting Frames
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IMPORTING ENGINEERS

232 Summer Street, Boston, Mass, U. S. A.

Long Distance Telephone—
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Cable Address—
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TEXTILE MACHINERY

Sole Agents in the United States and Canada for

PLATT BROS. & CO., Ltd.

OF OLDHAM, ENGLAND

By far the Largest Makers in the World of

Cotton, Woolen and Worsted Machinery

Also Sole Agents in U. S. and Canada for

MATHER & PLATT, Ltd.

Equipment of Complete Works for

BLEACHING, CALICO PRINTING, DYEING AND FINISHING

Patent Mechanical FILTERS for Town Supplies and all Industrial Purposes

Wool Washing and Drying Machines, Napping Machines, Sykes' Card Clothing for Cotton, Critchley's Card Clothing for Woolen and Worsted, Wilson Bros'. Bobbins, etc., Harding's Pins, Fallers and Circles, Dronsfield's Grinding Machinery and Emery Fillet; Double Loop Bands, Scroll Banding etc.; Condenser and Gill Box Aprons, etc.

THE U. S. GOVERNMENT

and the

MANCHESTER TESTING HOUSE

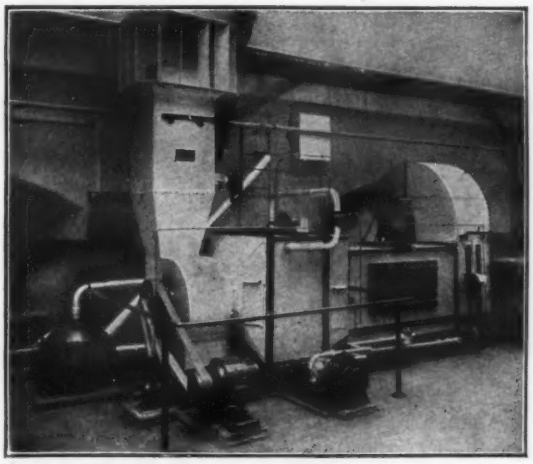
are

"Carrier Equipped"

In 1912, the Testing House and Laboratory of the Manchester (Eng.) Chamber of Commerce selected the Carrier System in preference to all others,—

and now

the Treasury Department has placed a contract with us for equipping the Testing Room at the Appraisers' Warehouse in New York, with a complete system, after a most searching and thorough investigation by that Department's engineers and scientists, and upon the advice of the Bureau of Standards.



The Carrier System was selected in each case because it was the only system that controlled both temperatures and humidities, and would humidify and dehumidify as required.

Our Engineer or catalog will call upon your request

Carrier Air Conditioning Co.

Of America

No. 39 Cortlandt Street, New York City

NEW ENGLAND
E. T. LYLE, Mgr.
176 Federal St.
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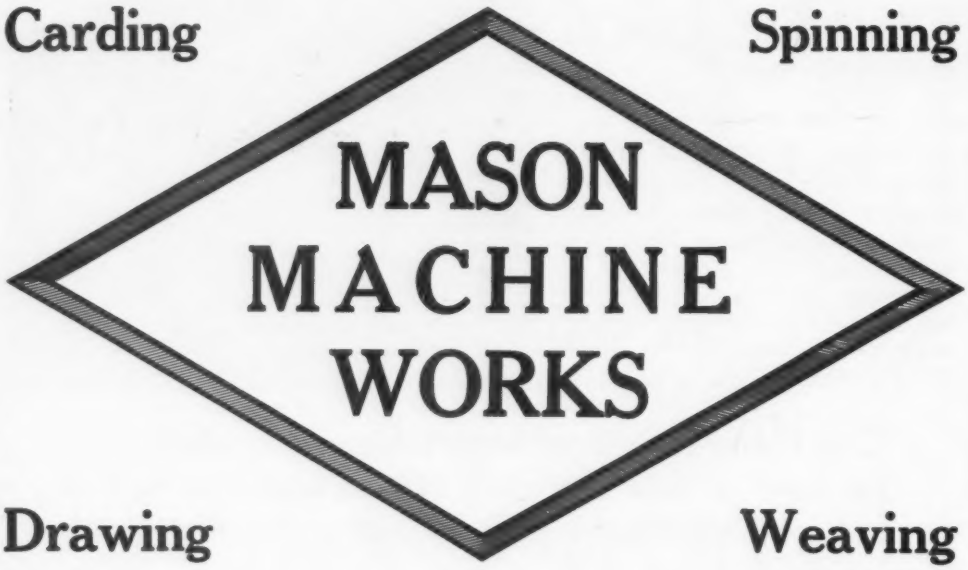
CHICAGO
A. E. STACEY, Jr., Mgr.
Ft. Dearborn Bldg.,
Clark and Monroe Streets

BUFFALO, 490 Broadway

PHILADELPHIA
E. T. MURPHY, Mgr.
734 Real Estate Trust Building

COTTON MILL MACHINERY

Carding Spinning

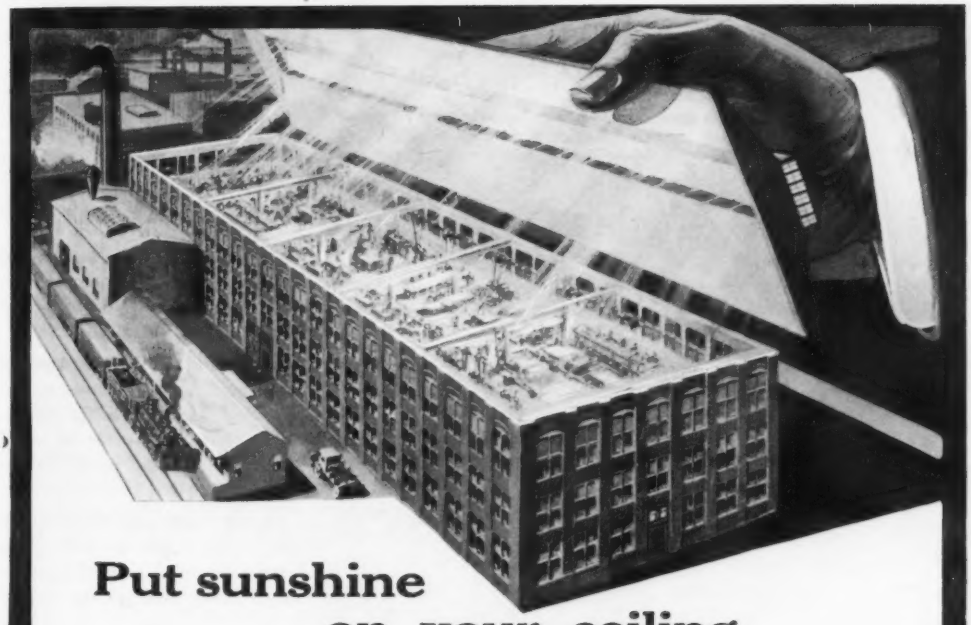


Drawing Weaving

Executive Office, 77 Franklin Street, Boston, Mass.
Arthur R. Sharp, Treas.; Thomas G. Cox, Agent

Southern Office, Greenville, S. C., Edwin Howard

Works at Taunton, Mass.



Put sunshine on your ceiling

An ever increasing number of textile mills are putting "Barreled Sunlight" on their ceilings and walls. It gives 19% to 36% more light; improves sanitary conditions; saves money by making repainting less frequent; employees work better because they can see better.

Rice's Gloss Mill White is the original "Mill White." All others are imitations. It is the only one which contains no Varnish. Varnish paints dry too brittle and are liable to crack and peel.

Rice's is an OIL Paint, its surface, therefore, is elastic, though firm, and withstands ceiling vibration.

Guaranteed to remain white longest

Rice's is made by a process over which we have exclusive control, which causes it to remain white longer than any other and prevents it from either cracking or peeling. The tremendous advantages of this process enable us to make the following guarantee:

GUARANTEE. We guarantee that if RICE'S does not remain white longer than any other Gloss Paint applied at the same time and under the same conditions, we will give, free, enough Rice's to repaint the job with one coat. We also guarantee that, properly applied, Rice's will not flake nor scale. You cannot lose under this guarantee.

Can be applied over old cold-water paint

Hundreds of factories, where cold-water paint was formerly used, have been treated with Rice's and the flaking and scaling permanently stopped. Not only is a durable surface thus produced, but a tile-like, smooth finish, which will remain white longer than any interior finish that can be used.

Write for Booklet "More Light" and Sample Board

Sold direct from factory

Rice's Mill-White is sold direct from the factory in barrels containing sufficient paint to cover 20,000 square feet—one coat.

RICE'S GLOSS MILL-WHITE

U. S. GUTTA PERCHA PAINT CO.
20 Dudley Street, Providence, R. I.

On concrete surfaces

On inside concrete, Rice's Granolith makes the best possible primer for a second coat of Rice's Gloss Mill-White—giving a tile-like enamel finish at no more expense than lead and oil paint.

Rice's Granolith

Parks' Piping Parables

"A man should never be ashamed to own that he has been in the wrong; it is but saying in other words that he is wiser today than he was yesterday."
—William Penn.

To Spend Wisely

They tell me that the most noticeable temperamental difference between the native of New England and the native of our West is the attitude of each toward the spending of money.

It looks as if a new turn had come with each section. The New Englander is just beginning to learn how to spend money and the westerner how to save it. Each has tempered the other.

And this middle position—the spending of money wisely—is far ahead of lavish waste or parsimonious pinching.

The biggest problem that confronts us all, whether our budget be that of an individual or a corporation, is how shall we most wisely spend our money so as to get the most of life, liberty and happiness.

The individual has to decide between sirloin or sausage; between Melba or the movies. The corporation has to decide between expansion or dividends; between expense or investment; between growth or stagnation.

So when I come to you asking you to spend your good money with us, it is not without a sense of responsibility; a responsibility that is mutual—for if you make an unwise expenditure of money, not only you but the whole community suffers.

That's a new slant on economics that is coming to the fore. It isn't a case of every one for himself, but as Dumas puts into the slogan of the Three Musketeers,—"One for all and all for one."

The best part of it is—it works in business.

A Few Thots About Steam Leaks

Steam leaks are like golf leaks. You can't tell what's the matter, but you know something is.

I remember some years ago we were doing a job of piping for a new mill. While the work was going on, the big chief took occasion to tell the manager that he would not get good economy; that the piping was too small between the boilers and the engine, and would cause a hidden leak in a drop in pressure, although the boilers were on one side of a brick wall and the engine on the other.

The manager was very young.

He informed the big chief in language less diplomatic than polite, something to the effect that there were some few things that were none of his business.

All bets off. And the plant went in as designed.

The result was however that there was a drop in pressure of ten pounds between the boilers and the engine for which that plant continued to pay for some years.

A hidden loss—but none the less a loss. Later on, this piping between the boilers and the engine was changed so that all the energy in the steam at the boiler pressure was available at the throttle.

When we deliberately cut into the efficiency of the steam plant, we multiply inefficiency rather fast at the coal pile.

Piping is so interwoven with steam plant economy that it is coming to its own. It's the last place in which to skimp; and the worst in which to guess.

Religion and Piping

It is a more admirable thing—it has a far better effect on the community to be a first-class hod carrier than to be a third rate dentist.

The world is just commencing to understand that all business is as intimately interlaced as are the warp and the filling in a piece of woven cloth; or as are the foundation and the superstructure in a building.

In his book named "Crowds," which you would do well to read, Gerald Stanley Lee gives us a new insight into business as a moral force.

He makes out a better case for the business man who lives and laughs and works, and swears maybe; who doesn't cheat but delivers the goods with sixteen ounces to the pound, than we business men are used to.

I had not thought piping a religious thing, but Lee says it is; that all good works are.

Did you ever suspect a steamfitter in overalls as religious?

Under the new definition, in spite of some of his idiosyncracies, his grease and oil, his chewing tobacco and peculiar vocabulary, he fits too; more so than the recluse who to be good shuns contact with you and me.

The thing I like about business is that men find enough points in common so they live and work together—and the things they can't agree on—why forget it.

Do you know—I think I feel better about the piping business, too.

PARKO

The G. M. Parks Company, Fitchburg, Massachusetts

As Seen By The Man—Right On The Job—It Is Right

(The following is from a letter written to one of our foremen)

The Turbo is Efficient

"We have now had the Turbo-Humidifier in operation nearly three months, and I take pleasure in testifying to the efficiency of the same.

A Troubleless Humidifier

"We have had no trouble whatever with the system during this time, and your own personal work upon the job was most excellent.

The Turbo Excels

"I have had experience with nearly all of the standard types of humidifiers, but the Turbo in my opinion excels at every point.

Saves 3% on Waste, Makes Better Stock

"I firmly believe that it is a direct saving of nearly 3 per cent. in the matter of invisible waste, besides enabling us to use stock that heretofore was unavailable and valueless.

Increases Earnings

"Our spinners run more sides, thereby increasing the individual earnings.

Takes Care of Itself

"The Turbo practically cares for itself and needs little or no attention, after being properly adjusted."

May we send an Engineer to tell you whether we can do as much for you? You may ask for the Engineer or a Catalog without obligating yourself in any way.

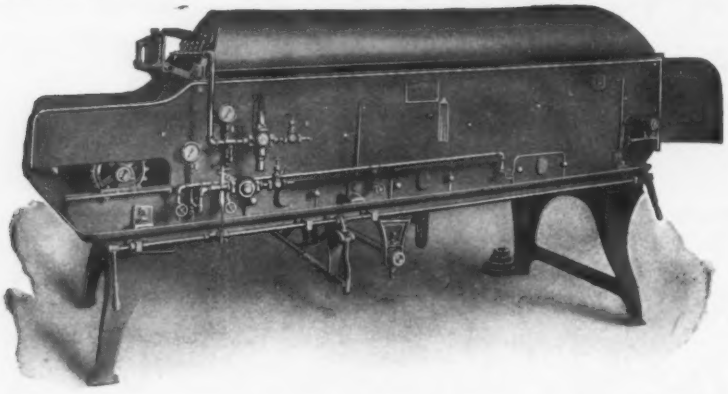
The G. M. Parks Company

Fitchburg, Mass.

Southern Office, 200 Commercial Bank Building, Charlotte, N. C. **J. S. COTHRAN, Mgr.**

The Yarn Conditioning Machine

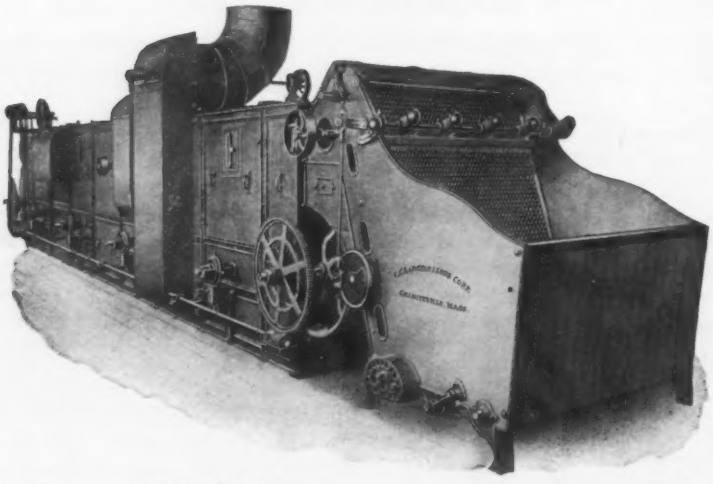
Sets the twist in your filling and overcomes kinky filling difficulties. It conditions without injuring the bobbins



The Sargent Drying Machines

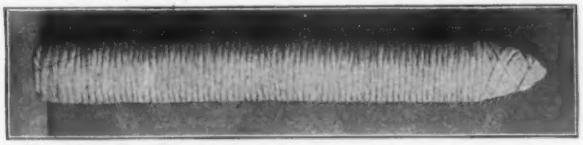
Metal Construction
Asbestos Insulation

Scientifically designed for greatest economy in drying Cotton, Wool, Hair.



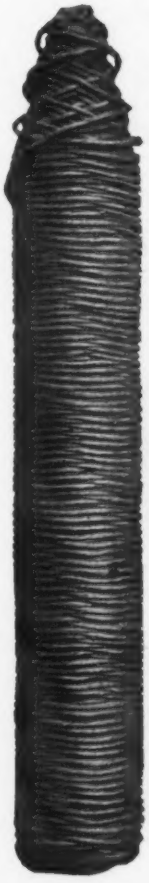
Wool Washers, Wool Dusters and Openers, Burr Pickers
Complete Carbonizing Plants
Automatic Feeds for Cotton and Wool

C. G. Sargent's Sons Corp., Graniteville, Mass.



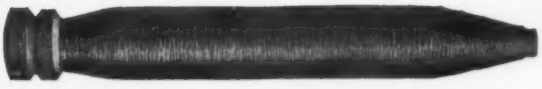
No. 2

No. 1 and No. 2—Cops to weave from inside seven-eighths to three inches diameter and up to seventeen inches long.



Suitable for various kinds of coarse goods such as grass matting, cotton bagging, cocoa matting, all kinds of carpets, felts, chinchilla, linen, jute, flax, asbestos, hose and narrow fabrics such as wicks, belting, webbing, surcingles, halters, etc.

No. 3 and No. 4 Shuttle Bobbins from seven-eighths to two inches in diameter and any length up to twelve inches. Suitable for all kinds of duck, upholsteries, tapestries, asbestos, ratana or any kind of fancy yarns for automatic or other looms.



No. 1 No. 4 No. 3

OSWALD LEVER CO., Inc.

13th and Cumberland Sts., Philadelphia, Pa.

Builders of Textile Machinery

WINDERS ESPECIALLY

The Hunter

NO. 10
FULLING
MILL

DRIVING SIDE

GEAR DRIVE

CLOTH WASHERS

PEICE DYE
KETTLES

SOAPING
MACHINES

BELT DRIVE

ROPE DRIVE

JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

OUR NEW

Hand-Threading Shuttle

Is the Simplest—Most Effective and Most Quickly Threaded Shuttle Made

NOTE THESE POINTS:

¶ Can be operated with the finest silk or the coarsest filling.

¶ Will neither unthread nor "balloon."

¶ Provision is made for easy removal of lint that may accumulate in the threading device.

¶ There is room for the insertion of felt for tension purposes.

¶ It complies with the Massachusetts sanitary shuttle law, and as other states are likely to enact similar laws, it is well to anticipate trouble by adopting this new shuttle.

Trial orders solicited.—Satisfaction guaranteed.

Paper Cop Tubes
Cones and Shells
Send your samples and we will quote prices on any lot desired

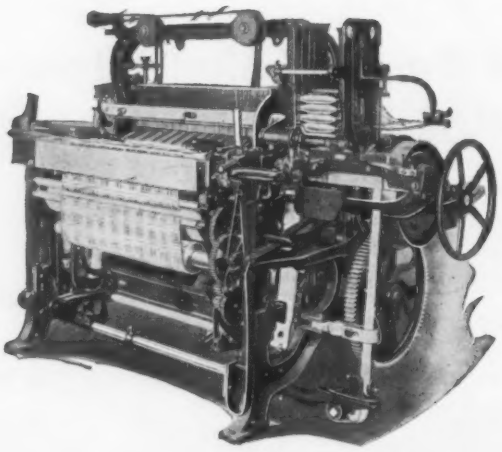
Shuttles and
Shuttle Irons
For All Textile Purposes

American Textile Specialty Machinery Co.

670 Eddy Street - Providence, R. I.

13th Street and Boulevard, Long Island City

Crompton & Knowles Loom Works



Automatic Gingham Looms

One of our latest productions for weaving goods of two or more colors in the filling. Like every loom we build, it has the advantage of a successful mill test.

WORCESTER, MASS.

Providence, R. I. **Philadelphia, Pa.**

Southern representative, ALEXANDER & GARSED, Charlotte, N. C.

ECONOMY AND SAFETY

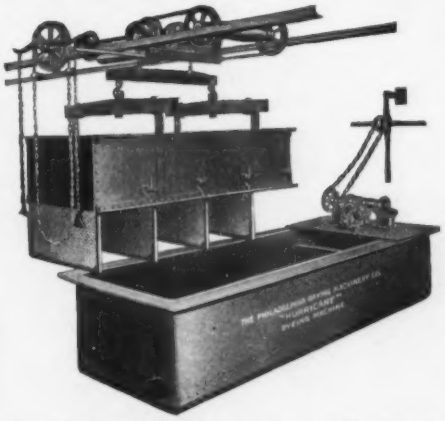
YOU GET BOTH WITH

"Hurricane" Machinery

FOR

HOSIERY
SKEIN
YARN
SLUBBING
etc.

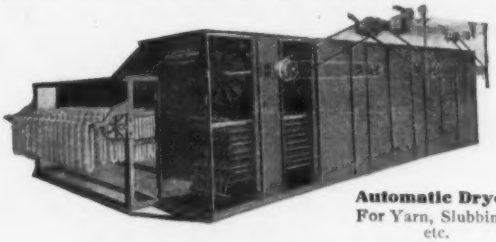
The best and mosteconomical Dyeing Machines



BETTER DYEING at LESS EXPENSE

Give us an opportunity to prove our claims

"Hurricane" Circulating Dyeing Machines are built in various sizes and types



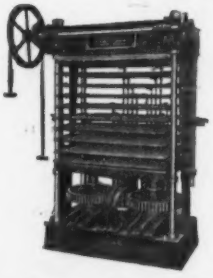
Automatic Dryer
For Yarn, Slubbing, etc.

Complete Equipments for

Dyeing
Scouring
Bleaching
Carbonizing

FIRE-PROOF DRYERS

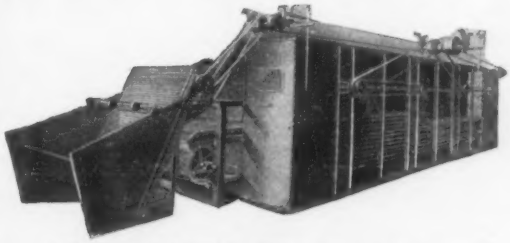
STEEL CONSTRUCTION INSULATED WITH ASBESTOS



Power-Screw and Hydraulic
PRESSES

Fans

Motor and Belt Driven

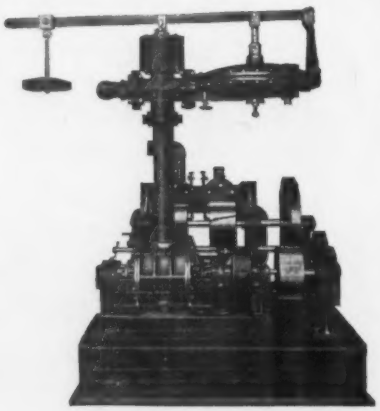


AUTOMATIC STOCK DRYER
(With Sectional Continuous Conveyor)
For Cotton, Wool, Hair, Rags, etc.

THE PHILADELPHIA DRYING MACHINERY CO.

Main Office and Works: 6721 Germantown Ave., Phila., Pa. **Boston Office: 53 State Street**

Agents Managers Superintendents



What are your answers to these questions?

Can the speed or capacity of your gasing machines be increased 25%, 50% or 75%; were you able to obtain and maintain controllable flame which adheres to burner when delivered under pressure or blast, as when turned low, producing just the temperature desired?

Are you obtaining at all times such mixture of air and gas as to produce a self-sustaining flame, leaving free the oxygen of the surrounding atmosphere to consume the charred nap?

Are your burners suitable to handle such mixture under pressure?

Are you consuming no more gas than is necessary to singe or calender work passing through your machines, or are you at the mercy of the operator who does the mixing at the several burners and has no two alike?

Are your calenders always heated to the desired temperature?

Do you know what is being done today with CITY GAS, when applied by the KEMP AUTOMATIC GAS SYSTEM?

May we send a representative to your mill or plant to take up the question in its order and explain our service?

THE C.M. KEMP MFG. CO.
405-413 E. OLIVER STREET
BALTIMORE, MD.

THOMAS LEYLAND & CO.

MANUFACTURERS AND IMPORTERS OF

Textile Machinery

Works
Readville, Mass.

60 India Street, Boston, Mass.
F. T. WALSH, Manager

Manufactured by us at Our Own Shop at Readville, Mass.

Belt or Gear Driven.

With or Without Plaiting Down Attachment.

Improved Free Running Scutcher

For Woolen Mills, Worsted Mills, Bleacheries, Print Works, Piece Dye Works

MYCOCK'S PATENT

Regulating Cloth Expanders
Guides and Openers

Portable Sewing Machines
Whale Back Sewing Machines

We solicit correspondence from anyone who may have an idea, for textile machinery improvements, which may be developed and patented.

Starch

THE particular case of your own mill needs careful study to determine what starch is best suited to *your* SIZING and FINISHING problems.

We have reduced the manufacture of starches for textile work to a science by years of factory investigation and laboratory research. We are ready to take up the special case of your mill and point out to you what starches are most adaptable and reliable for your purposes.

Six years of careful investigation of conditions in the cotton mills of the country has taught us the needs of the trade.

Six years' research in the best equipped Starch Laboratory in America has put us in touch with starch chemistry.

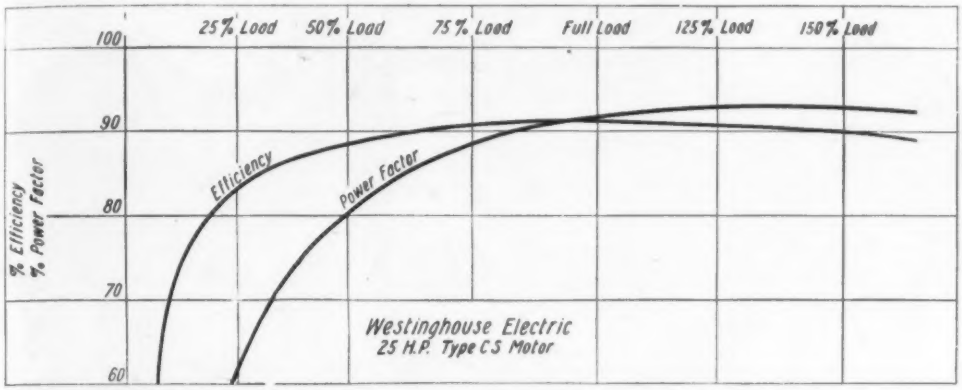
Six years of manufacturing, with cotton mill problems in mind, has produced our special Brands of Textile Starches.

We want to send our special starch expert to your mill. We want him to go into the matter of sizing with your boss of slashing—check up your sizing processes—find out whether you are now using the starches that will insure you the most efficient and economical results.

This special starch expert service is absolutely free—send us a sample of the starches you are using. We will give you an exact analysis of them and send our practical man to study your needs. Write a letter now to our Mill Starch Department.

Corn Products Refining Company
NEW YORK

Starch



Westinghouse Electric C S Motor Efficiency

Will Save You Money

WHERE motors must operate continuously all day long, as they do in textile mills, a per cent or two improvement in their efficiency means a material saving in power costs.

The efficiency of the Westinghouse Electric CS motor line is higher than that of any other on the market. The curve shown above is typical. Ask the Westinghouse representative for the efficiency guarantees on the motors in which you are interested and compare with those of other makes.

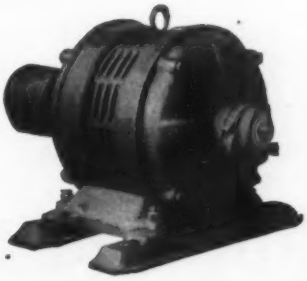
Westinghouse Electric & Mfg. Co.

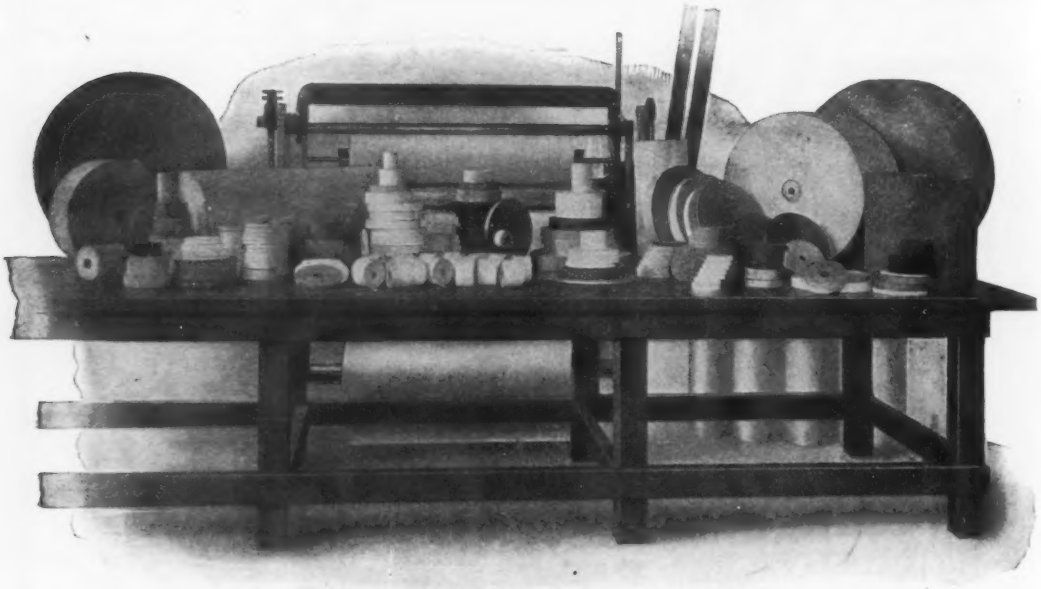
East Pittsburgh, Pa.

Boston
New York

Philadelphia

Charlotte
Atlanta





Specimens of Rolls, large and small, produced by

Cameron Slitting and Rewinding Machine

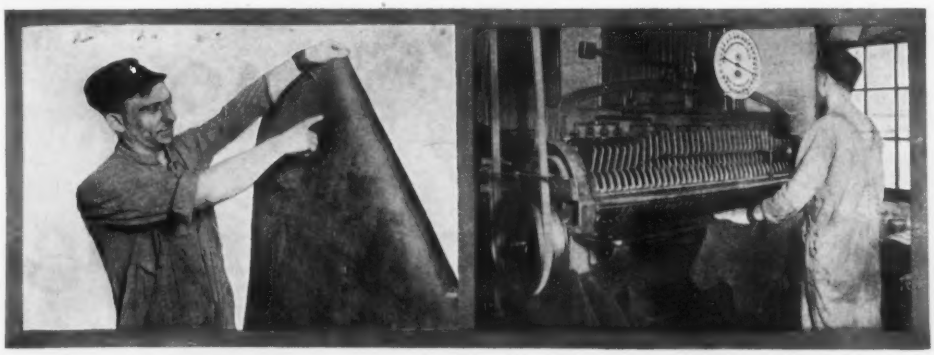
(UNIVERSAL TYPE)

Correspondence is invited relative to all problems involving a *rolling up process* or any operation where fabric or other material is split into narrower widths and rolled up into coils.

Perfect Rolls are *impossible* by *old style Rolling Up Machines.* Let us make some suggestions.

Cameron Machine Company

57-61 Poplar St., Brooklyn, New York



1851 G&K TRADE MARK

Lace Leather Is Never "Short"

You take no chances on G & K Lace Leather either in quality or quantity

EVERY piece is measured accurately by our "Turner" measuring machine, which is operated by a "sworn" measurer and regularly inspected and sealed by Massachusetts State Authorities. The number of square feet is stamped plainly on each side of lace leather leaving our plant—every measurement is guaranteed to be absolutely correct.

G & K Lace Leather incorporates the essential qualities of uniform thickness, great tensile strength, unusual pliability, and long life under severe usage. The sides are closely trimmed and the hand cut lacings are well balanced.

All quality and measurement statements and guarantees apply to each brand of G & K Lace —the Royal Worcester, which is a mechanical lace, the strongest and most durable of its kind—the Kelton-Bruce Original Indian Tanned, the standard of tanned lace leather since its inception in 1871—the Crescent, an excellent quality of rawhide lace.

Be sure to look for the Trade Marks, they are your protection and guarantee of accurate measurement, superior quality and absolute satisfaction.

You will be interested in our Lace Leather prices and samples. May we send them?

The Graton & Knight Mfg. Co.

OAK LEATHER TANNERS, BELT MAKERS and LACE LEATHER MANUFACTURERS

Worcester, Mass., U. S. A.

BRANCHES

Atlanta	Fall River	New Orleans	San Francisco
Boston	Kansas City	New York	Seattle
Chicago	Milwaukee	Philadelphia	St. Louis
Cleveland	Minneapolis	Pittsburgh	Tacoma
Detroit	Montreal, P. Q.	Portland, Ore.	

Selling Agents for Texas: The Graton & Knight Mfg. Co., of Texas, Dallas, Tex.

ROYAL WORCESTER 1851 G&K TRADE MARK ALWAYS RELIABLE GUARANTEED FULL MEASURE

KELTON BRUCE ORIGINAL INDIAN TANNED MANUFACTURING COMPANY

CRESCENT

Cramer System
of
Air Conditioning

Cramer "High Duty" Air Conditioner

Cramer Automatic Regulator

FACTS

In several large mills equipped with humidifiers of other makes, we have entirely reorganized their system, installing our "High Duty" equipment with automatic humidity and temperature control and the average improvement during the succeeding twelve months test is:

A—Seconds reduced over 50%.
B—Production uniform day after day (No big jumps.)
C—Actual waste account halved.
D—Large saving in "invisible waste."

What Would Similar Results Be Worth To You?

STUART W. CRAMER

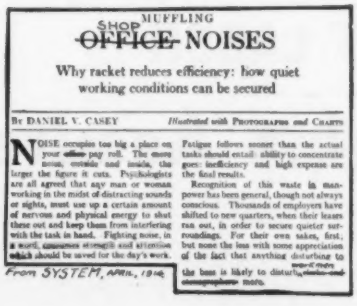
50 Church St. New York — **Charlotte, N. C.** — Tremont Bldg. Boston, Mass.

Read What SYSTEM
THE MAGAZINE of BUSINESS

Prints About Noise
And Apply to Your Conditions

Note the few changes Mr. Casey could have made (as we have indicated) and he would have been talking about the benefits of

NEW PROCESS NOISELESS PINIONS



SHOP MUFFLING
~~OFFICE~~ NOISES

Why racket reduces efficiency: how quiet working conditions can be secured

By DANIEL V. CASEY *Illustrated with* PHOTOGRAPHS *and* CHARTS

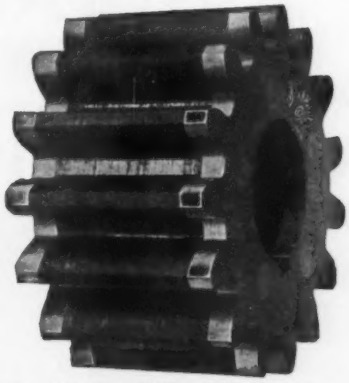
NOISE occupies too big a place on your ~~office~~ pay roll. The more noises, outside and inside, the larger the figure it cuts. Psychologists are all agreed that any man or woman working in the midst of distracting sounds or sights, must use up a certain amount of nervous and physical energy to shut these out and keep them from interfering with the task in hand. Fighting noise, in a word, consumes strength and attention which should be saved for the day's work.

Fatigue follows sooner than the actual tasks should entail: ability to concentrate goes: inefficiency and high expense are the final results.

Recognition of this waste in man-power has been general, though not always conscious. Thousands of employers have shifted to new quarters, when their leases ran out, in order to secure quieter surroundings. For their own sakes, first, but none the less with some appreciation of the fact that anything disturbing to ~~one~~ many

the boss is likely to disturb ~~stenographers and stenographers~~ more.

From SYSTEM, APRIL, 1914



Here are some of the benefits according to SYSTEM that came from the muffling of noise in an office. New Process Pinions will certainly do just as much for a shop because gear noise is even GREATER.

Absences on account of sickness were reduced. Better work and more of it is done in the same time, because the energy expended formerly in defensive concentration is available for concentration on the work itself. So marked was the improvement that the offices of two of the company's branch houses have been treated in the same way.

Replace JUST ONE of your noisy metal pinions with a New Process and you will quickly realize the gain that would come with muffling ALL noisy gear drives.

Ours is the strongest and most durable non-metallic gear made. More in use than all others combined.

Ask for our book, "Noiseless Gear Driving," in which many actual installations are shown. Perhaps you will find a case just like your own.

NEW PROCESS IS TO ALL OTHER RAWHIDE AS STEEL IS TO IRON

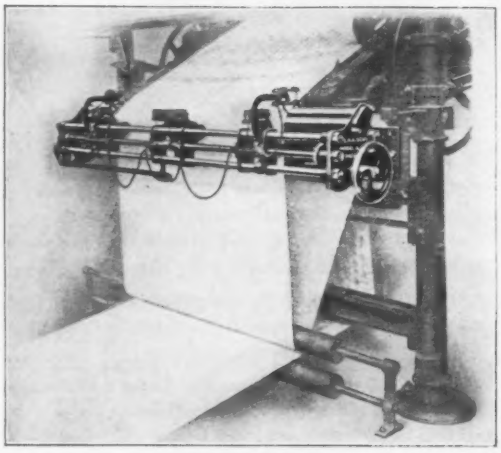
N.P.R.H. REG. U.S. PAT. OFF. **NEW PROCESS GEAR CORPORATION** N.P.R.H. REG. U.S. PAT. OFF.

SYRACUSE, N.Y.

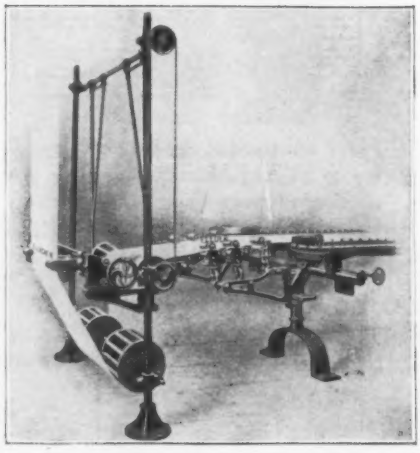
Canadian Agents: Robert Gardner & Son, Ltd., Montreal 98

Automatic Electric
CLOTH FEEDERS
FOR
Tentering Machines, Dryers Calenders, etc.
OVER **100% INVESTMENT**
IN SAVING OF LABOR

Prompt Deliveries Assured



MODEL A FEEDER



MODEL C FEEDER

L. H. A. SCHWARTZ & CO.
40 CENTRAL ST., BOSTON, MASS.

All kinds of Finishing Machinery for Cotton, Woolen and Worsted Yarns and Cloth

Dealers in China, India, Egyptian and American Cottons

FIG.20.
Extra heavy, best quality cotton duck.
Leather binding.

THERE
IS A

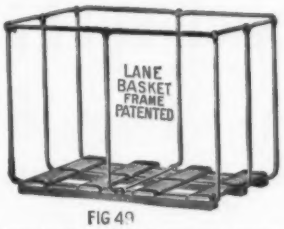


FIG 49
Lane Indestructible frame with renewable hard wood shoes.
Made also with iron shoes

LANE BASKET

OR

TRUCK

FOR YOUR ESPECIAL USE

WRITE FOR CATALOG

MANUFACTURED BY

FIG.22.
Round taper style.
For bobbins, waste, etc.

W. T. LANE
& BRO.

POUGHKEEPSIE
N. Y.

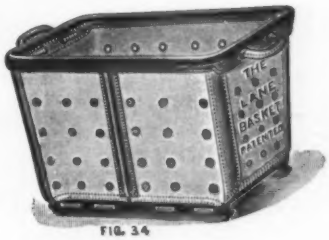


FIG. 34
The Lane Basket
is a long-lived, quick steamer.

Sheffield Farms Slawson Decker Co.

524-528 West 57th Street

Executive Offices, - NEW YORK

Charles A. Schieren Co., Dec. 11th, 1914
30-36 Ferry St., New York City.

Gentlemen:—

The plant that our Company, the Sheffield Farms-Slawson-Decker Co., constructed in the year 1910 has been in continuous operation night and day for a period of nearly four years. At the time of its construction some scientific engineers made remarks that we were retracting instead of advancing in methods of equipment with machinery by using a belt system in preference to direct connected Compound Corliss Engines.

However, we are pleased to state that the efficiency of this plant has been recognized by some of the most eminent engineers of this country as the most efficient plant per pound of coal per Horse Power at the present time.

We are heating milk to a temperature of 148 degrees Fahrenheit and cooling the same to a temperature of 38 degrees in a period of eight hours with a capacity of 60,000 quarts of milk, and have produced at a continuous run 90 tons of ice and 50 tons of refrigeration every 24 hours. This was accomplished with two 100 ton refrigerating machines and the Company takes great pleasure in cheerfully stating in behalf of the Schieren Company that the belting they have furnished us, which was nearly 500 feet of 48, 46 and 22" three ply, amounting to over $6,000.00, has been an economical investment for us and we have never had one minute's cause of delay, and from present indications we are warranted in saying that the belts are good for twenty years to come. We feel as if we should give your Company great praise and that our experience has more than proved the sincerity of our transactions.

Yours very respectfully,

SHEFFIELD FARMS SLAWSON DECKER CO.

Lotor Horton

LH/MM *President*

FEBRUARY is just as good a month as January to start to save power, but, you'll have to hurry.

MORSE Silent Chains

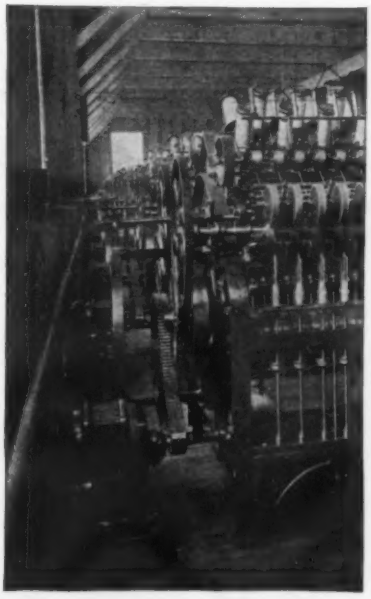
(The Kind with the Rocker Joint)

are not a stock proposition. Each drive is *designed* especially for the work it has to do, therefore time is an important element.

We have the largest factory in the world devoted exclusively to the manufacture of silent chain power transmission and excellent equipment for doing the work quickly, but, even we cannot fill orders the day they are received.

If you want a drive for a pump, or a compressor, or an engine governor, or any of your special textile machines, order it NOW if you would start to save power the latter part of February or the first of March.

Our nearest office will gladly supply detail information, literature, etc., and hurry along your order. Get in touch with them today.



Morse Chain Company Ithaca, N. Y.

NEW YORK, 50 Church Street,
BOSTON, 141 Milk Street,
CHICAGO, Merchants L. & T. Bldg.
PITTSBURGH, Westinghouse Bldg.
CLEVELAND, 421 Engineers Bldg.
DETROIT, 735 Dime Bank Bldg.
SAN FRANCISCO, Monadnock Bldg.

REPRESENTATIVES:
ST. LOUIS, Morse Engineering Co., Central National Bk. Bldg.
MINNEAPOLIS, Strong-Scott Mfg. Co., 413 Third Street, S.
ATLANTA, Earl F. Scott, M. E., 702 Candler Building.

B-76

Rotary Dyeing and Washing Machine

CYLINDER CONSTRUCTED WITH 2 OR 3 COMPARTMENTS

This new type of machine has proven a great success. The cylinder is built of all wood or non-corrosive metal, according to kind of work intended for.

All types of Dyeing and Finishing Machines for Hosiery.

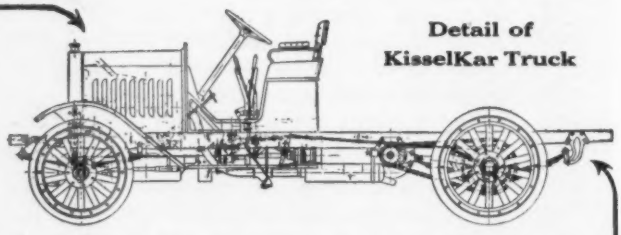
SMITH DRUM & COMPANY

"Builders of The Best"

Southern Agent
H. G. MAYER, Realty Bldg., Charlotte, N. C.

PHILADELPHIA, PA.

Let KisselKar Truck Owners Tell You Their Story



Detail of KisselKar Truck

IF you are going to buy a truck find out what KisselKar Trucks have done for men in *your line of business.* The Kissel Motor Car Company will be glad to give you the names. See them or, if at a distance, write them. They will tell you just how sturdy and dependable KisselKar Trucks are and what you can expect them to accomplish.

KISSELKAR TRUCKS

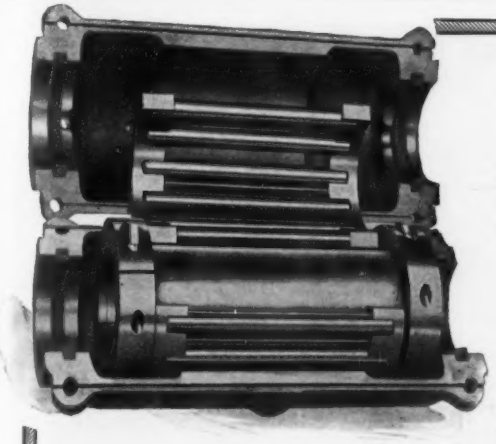
KisselKar Trucks are used in over two hundred lines of business. *In many cases they have paid for themselves the first year.*

There are six sizes of KisselKar Trucks—1500 lbs, 1, 1½, 2½, 3½ and 6 tons carrying capacity. Special bodies can be built for any requirement.

Send for illustrated Truck Portfolio—tersely in words, graphically in pictures

Kissel Motor Car Co., 528 Kissel Ave., Hartford, Wisconsin

New York, Chicago, Boston, Philadelphia, St. Louis, Milwaukee, St. Paul, Omaha, Minneapolis, Baltimore, Pittsburgh, Cleveland, Detroit, San Francisco, Los Angeles, Seattle, Buffalo, Rochester and 300 other principal points.



Power-Loss Prevention

PEOPLE do all sorts of things to prevent fire loss, accident loss—and the chance to do this is merely occasional! Power-Loss can be prevented continuously, for power goes to waste all day long, every day,

"Sells"
Line Shaft
Roller Bearings

through preventing loss due to heavy friction load, pile up dividends continuously on the power end, and the elimination of 50% or more of friction load is absolutely guaranteed. Study the construction. Then write us for ***proof.***

Royersford Foundry & Machine Co.

56 North Fifth Street, Philadelphia

Babbitted Ring Oiling Bearings—Shaft Hangers, Collars and Couplings—Punches and Dies—Punching and Shearing Machines—Sensitive Drill Presses—Punching and Trimming Presses—Foot Presses—Grinding and Polishing Machines—Tumbling Barrels—Iron Castings—"Rollerine" the ball and roller bearing lubricant

Centrifugal Action

is now being used by over 1300 concerns to separate liquids and solids. The only reason these concerns order and then reorder S. & U. Extractors is because they pay; and the only way there was for them to be sure that they could pay was to investigate.

Schaum & Uhlinger Extractors

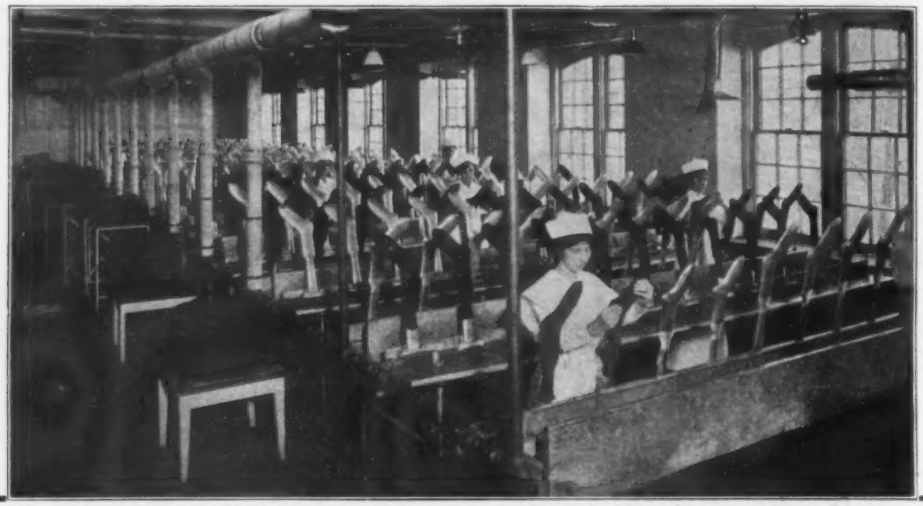
run an equal chance of reducing waste in your plant, as they have for 1300 others. The burden of proof rests with us, and we will be glad to give you full information about the expense of installing our machines and their capacity for work, if you will tell the kind of material you would want to handle

We have a newly published book giving valuable information on "Centrifugal Extraction" that is yours for the asking. When you write, be sure to give us your firm name and full address.

Schaum & Uhlinger, Inc.

Glenwood Ave. and 2nd St.

Philadelphia, - U. S. A.



This equipment is using exhaust steam at atmospheric pressure. Compare with conditions in your boarding room

Saves Labor, Power, Steam and Seconds

FORMS ARE MADE TO SUIT YOUR STYLES

You Can Secure This Equipment Without Capital Outlay

For particulars write

THE PARAMOUNT METAL FORM DRYING COMPANY, - BEAVER DAM, WIS.

Patented Sept. 3, 1912—October 24, 1914. Other patents pending

FAIRBAIRN LAWSON COMBE BARBOUR LTD.

FAIRBAIRN MACPHERSON BRANCH— Wellington Foundry LEEDS.

LAWSON BRANCH— Hope Foundry LEEDS.

COMBE BARBOUR BRANCH— Falls Foundry BELFAST.

AND AT LILLE, FRANCE.

MAKERS OF MACHINERY FOR PREPARING AND SPINNING FLAX, HEMP, TOW AND JUTE,

AND ALL

MACHINERY for the MANUFACTURE of TWINES and ROPE YARNS.

SOLE MAKERS OF

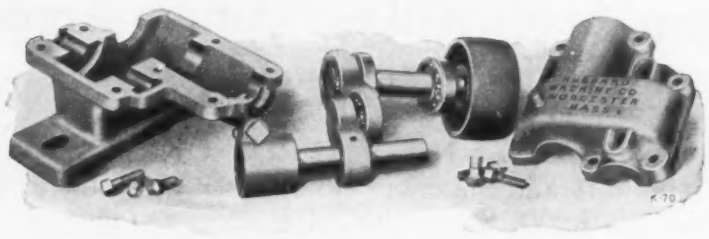
The Patent Centrifugal Flyer Cop Dry Spinning Frame

For Spinning Cops on the Bare Spindle.

ALSO MAKERS OF

ENGINEERS' GENERAL TOOLS for RAILWAY and ORDNANCE PURPOSES, &c., STEAM ENGINES, GROOVED ROPE PULLEYS, SHAFTING, &c.

COMPLETE PLANS AND ESTIMATES FOR SPINNING AND WEAVING MILLS SUPPLIED.



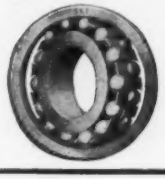
Ball Bearing Doffer Comb

2,000 R. P. M.

You can now use doffer combs that run 2.000 r.p.m. without heating and without spattering oil. Here is a silent, light, easy running comb that will not get out of order. It is equipped with

SKF BALL BEARINGS

They save power, maintenance and upkeep. The bearings of Swedish steel of highest analysis, operate on the self aligning principle. The power saving makes them a good investment.

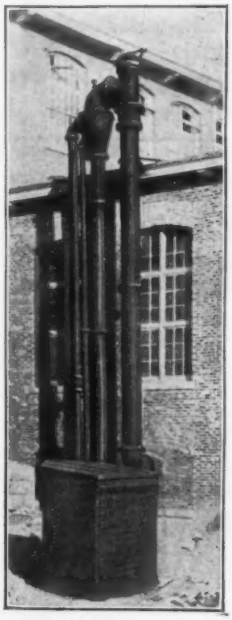


Specify S. K. F. Ball Bearings on Doffer Combs

Send for Bulletin No. 14-M

SKF BALL BEARING CO.

50 Church Street, New York



"Buffalo" Barometric Condensers

Will Reduce Your Fuel Cost
15 to 30%

They are simple in design, require little condensing water, have no parts in condenser head to wear out or give trouble and cannot clog.

We build a complete line of

Steam Pumps **Vacuum Pumps**
Power Pumps **Centrifugal Pumps**

in large and small sizes for all classes of work. No matter what your requirements may be, we have just what you need.

Let us send you Catalog 228-74

Buffalo Steam Pump Co.

Buffalo, N. Y.

Branches in all Principal Cities

Paragon Apron Oil Union Apron Oil

The condition of Aprons or Rub Rolls
is a matter of the greatest importance

PARAGON AND UNION APRON OILS keep the aprons or rub rolls soft and pliable. They not only tend to increase production but make a smooth roving.

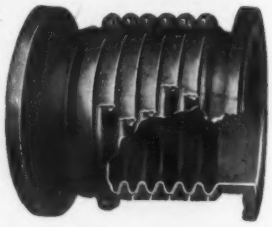
BORNE, SCRYMSER COMPANY

80 South Street, New York

Works - - Claremont, Jersey City, N. J.

BOSTON **PHILADELPHIA**

A Slip Joint Is Not Enough!



You install a slip joint to take care of the pipe expansion—but you must look after it—you must see that it is properly packed—it often leaks. You install a

BADGER

Self-Equalizing Expansion Joint

and promptly forget it. It's always tight without any packing. It simply can't leak for it is a single piece of copper with corrugations and distribuitng rings. The rings prevent bulging under great pressure and collapse in an exhaust pipe. Not one, but many corrugations take up the change in pipe length. Not unsightly as is a bend or sweep. Takes no more space than a flange fitting.

50-14

E. B. Badger & Sons Co., 73 Pitts Street, Boston, Mass.

RELIANCE CLOTH HANGING MACHINE

For shrinking woolen, worsted and cotton goods; **drying oilcloth,** or waterproof cloth, and curing rubberized cloth.

Can be attached to any machine or operated separately

In use by the United States Quartermaster **department** for shrinking uniform cloth.

Write for catalogue and prices

Reliance Machine Works

Frankford. Phila.

WILLIAM FIRTH
Pres.

THE

FRANK B. COMINS
Vice-Pres. and Treas.

American Moistening Company

120 FRANKLIN STREET, BOSTON, MASS.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"SIMPLICITY AND ORIGINALITY OF DESIGN"

Is the largest manufacturer of HUMIDIFIERS in the world. The last twenty years receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDALS and others.

The Only Perfect System of Air Moistening

Has Been Adopted by the Representative Manufacturers of this Country.
The only System adopted in the Textile Schools. Write for booklet "T" on Humidification.
Legal proceedings will at once be taken against infringers and users of infringements.

JOHN HILL, Southern Representative, 1014 Healey Building, ATLANTA, GA.

WM. SELLERS & CO., INCORP'D

Main Office and Works
1600 Hamilton St., Philadelphia, Pa.

New England Office
79 Milk St., Boston, Mass.

Latest and most approved methods of

POWER TRANSMISSION

by

BELTS, ROPES OR GEARS

Write for full information

SALEM ELEVATOR WORKS

Salem, Mass.

Elevators Especially Adapted for Textile Mills

Protect Yourself Against Liability Laws

We make a specialty of attaching to Elevators, already in use, Automatic Folding Hatch Doors, Semi and Full Automatic Gates, Automatic Locking and Stopping Devices, Automatic Car Safety Attachments, etc.

Send for Illustrated Catalogue and Estimate

BIRCH BROTHERS

ALBERT BIRCH, TEXTILE MECHANICIAN

SOMERVILLE, MASS.

BIRCH TREE

"Coronation"

Piece-End

Sewing Machine

Sent on trial most anywhere

Sews any fabric, thick or thin, wet or dry, without change

Fine Stitch or Coarse Stitch

Send for Circular

Also Makers of

Dyeing and Finishing Machinery

Scutchers, Openers, Folders, Crabbing and Soaping Machinery

Starch Mangle.—This is the two-roll machine, with brass and rubber rolls. Mangles built with rollers of any material or number desired. Send for circular.

If Your Pumps Are GOULDS The Quality Is There

GOULDS PUMPS

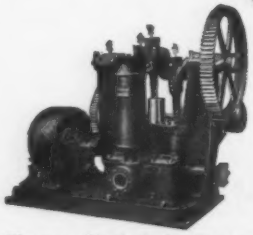


Fig. 957. Single-Acting Triplex Plunger Pump

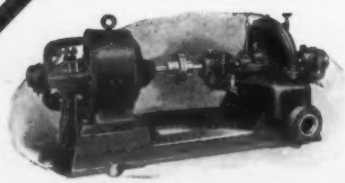


Fig. 3001. Double Suction Centrifugal Pump

Bulletins on Pumps for Textile Mills, Bleacheries and Dye Houses, sent on request

THE GOULDS MANUFACTURING COMPANY

Main Office and Works: SENECA FALLS, NEW YORK

Branch Houses: Boston New York Atlanta Chicago Houston

"The old methods of taking time are not sufficiently accurate to give us the necessary check on our productive time."

—Statement by prominent textile executive.

Now comes a prominent textile executive who, disregarding tradition, says:

"I AM satisfied that the old methods, employed in the taking of time in cotton mills are not sufficiently accurate to give us the necessary check on our productive time.

"I believe the day has arrived when all matters in connection with the taking of time, the figuring of pay-rolls and the distribution of wages should be divorced from the manufacturing end of the business.

"We in the office are held responsible for the accuracy of the pay-roll record, and I want this record compiled by my own men in my own way from the time shown by some modern time recording instrument and not by some hit-or-miss statement turned in by some second-hand or overseer who is not fitted, either by education, ability or disposition, to take charge of matters of this sort."

The executive above quoted uses International Time Recorders with signal success. He is receptive to new ideas, and has profited by the assistance which we have been able to give him in transforming his former inefficient method of time keeping into methods of strict efficiency.

The International Time Recording Company
of New York
Lock Box 1200 - ENDICOTT, N. Y.

LONDON OFFICE: International Time Recording Co., Ltd., 30-32 Farringdon R'd, London, E. C., England.

BERLIN OFFICE: International Time Recording Co., m. b. H. 135-136 Alexandrinenstr, Berlin, S.W., Germany.

The New International Dey Register—Fully Automatic

Registers regular time in green; irregular time (late arrivals and early departures) in red.

The weekly dial sheet is in the form of a payroll ledger sheet and serves every purpose of a regular payroll ledger. The help can be paid directly from the mechanically recorded time without re-writing into books. Wonderful saver of clerical time in making up payroll.

Vanquish Trucking Troubles

Modern methods and scientific management are responsible for the success of our representative American industries. The elimination of waste motion makes each operator's efforts count for lower production cost and higher yearly profits.

National-Chapman Elevating Trucks

reduce to a minimum the cost of conveying material in any establishment. Rehandling damage is avoided, idle trucks are eliminated, floor space is saved and labor is reduced.

The 1915 Model (in cut below) has a complete head turn, a feature all valuable for narrow aisles, between machines, etc. In addition a handle release mechanism makes it the most simple truck to operate on the market to-day. Also built in nine other standard models,

Advise us concerning your trucking difficulties and we will gladly aid you in solving them. Catalog "W" is yours for the asking. Write for it TO-DAY.

National Scale Co.,
18 Record St., Chicopee Falls, Mass.

The "Reeves" Way is the "Money-Making" Way

of controlling the speed of your machines.

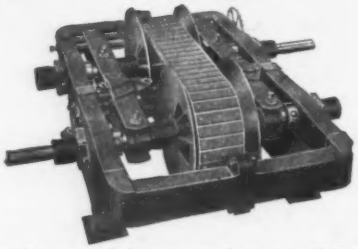
It gives exactly the speed you need for any fabric on any machine.

Wherever you have been using cone pulleys, gears, expanding pulleys, steam engines or other unsatisfactory methods of changing the speed you will find

"The Reeves" Variable Speed Transmission

will save materials, time, labor, trouble and power.

It will help you do more work and better work at less expense.



More than 500 of them in use in Textile Mills driving dryers, tentering machines, singers, mangles, washing machines, etc.

Catalog T-16 tells about it

Reeves Pulley Co., Columbus, Ind.

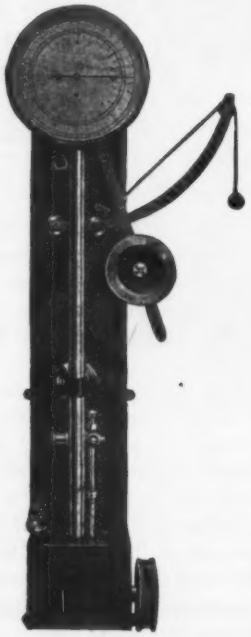
Chicago Branch, Corner Clinton and Monroe Sts.

EASTERN AGENTS:

Lewis E. Tracy Co., ... Boston
Patterson, Gottfried & Hunter, New York City
W. E. Shipley Machinery Co., . . Philadelphia

AUTOMATIC POWER YARN TESTER

PATENTED



Manufactured by

HENRY L. SCOTT & CO.
223-233 Eddy St., Providence, R.I.

Send for Catalogue C

PERKINS FANS FIT ALL MILL NEEDS

The superior durability and adaptability of Perkins Ventilating Fans are results of these features: instead of cast iron construction in general, Perkins Fans have steel frames, steel drums, steel blades, arms, shafts, etc.

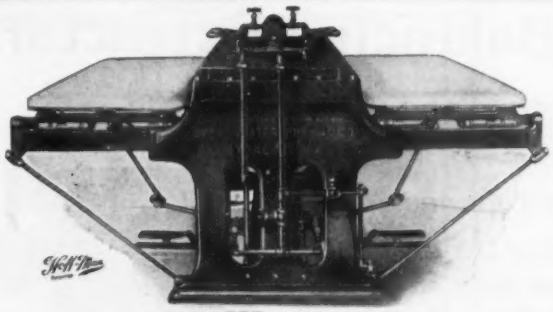
THE BLADE ARMS ARE ADJUSTABLE AND REVERSIBLE

They can, therefore be set at any angle necessary to vary the Fan's capacity without a change in the speed of the Fan.

We also build special power transmission devices by means of which you can get a drive to your fan wherever you may want to install it.

Complete Catalog No. 85 B on request.

B. F. Perkins & Son, Inc., Holyoke, Mass.



HOFFMAN FFF MODEL PATENTED

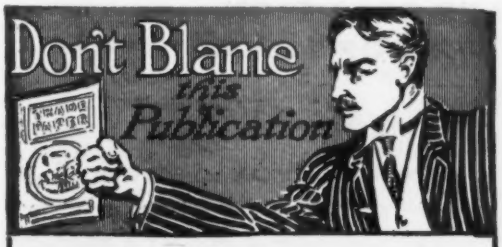
Alpine Knitting Mills of Pittston, Pa., say:

"Operators quickly develop a high degree of efficiency in neatly placing garments on the Hoffman and a wonderful speed is soon acquired. Under the pressure of the press every fibre of the fabric seems to have been set in its proper place and every garment is brought up to the most sightly condition imaginable."

A HOFFMAN UNDERWEAR PRESS

Improves the appearance of knit goods and increases the efficiency of labor

United States Hoffman Co., Syracuse, N. Y.



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The Adman's Supply House

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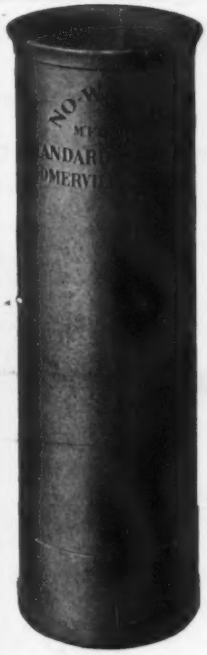
The Bukey Co., 54 Bible House, N. Y.



THE

"No-Waste"

Seamless Hard Fibre Roving Can

It does not have the riveted seam that strains and breaks the sliver

NO SEAMS OR RIVETS

ABSOLUTELY SMOOTH

Also

Fibre and Steel Clad Cars
Doffing Trucks
and
Mill Boxes All Kinds

Sheet Fibre Tubes
Rods
Special Shapes

Standard Fibre Co.

25 Miller Street, Somerville, Mass.

Tolhurst Self Balancing Extractors

Belt, Engine and Motor Driven

Sizes 12" to 72"

Dye Tubs and Tanks

Reel Dyeing and Bleaching Machines

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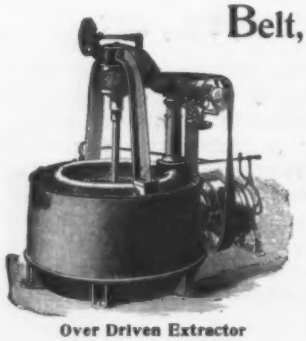
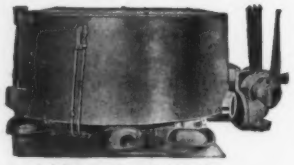


Over Driven Extractor



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TOLHURST MACHINE WORKS, Troy, N. Y.

FRED H. WHITE, Southern Representative, Realty Bldg., Charlotte, N. C.
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WILLIAM BODDEN & SON, Limited

The "BODDEN" Flyer

For QUALITY OF FINISH
For QUANTITY of PRODUCTION
HAS STOOD THE TEST OF YEARS

Sole Agents for U. S. A.

Thomas Mayor & Son, Olney Street, Providence, R. I.

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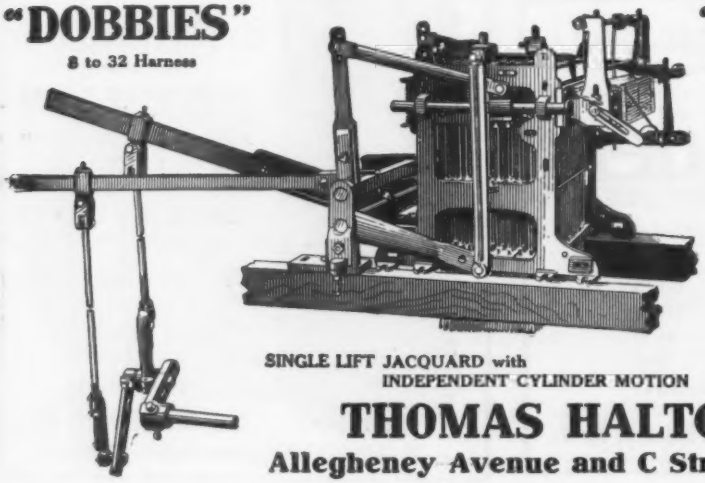

SINGLE LIFT JACQUARD with
INDEPENDENT CYLINDER MOTION

"JACQUARDS"

208 to 2608 Hooks

ALL TYPES

HARNESS BUILDING

THOMAS HALTON'S SONS

Allegheny Avenue and C Street, Philadelphia

DYEING MACHINES
Giles
TRADE MARK

If You are Interested in

Machines for
Dyeing or Bleaching Yarns

Cotton
Wool
Worsted
Silk
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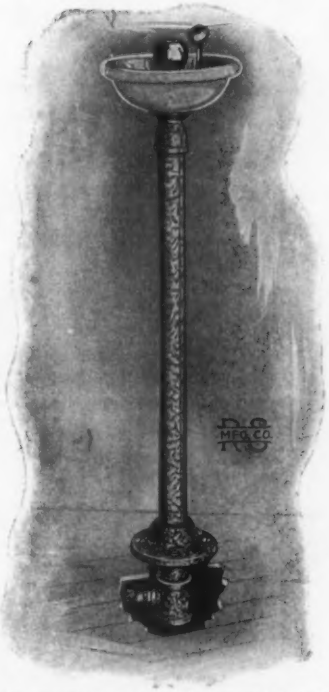
Write us to send you an estimate of cost of installing an equipment as well as the economies in labor and steam that can be made.

John H. Giles Dyeing Machine Co.

TAUNTON, MASS.

ECONOMY



This is one of our many inexpensive bubblers. Your people are in better condition, when properly refreshed, to give their best effort, so from a selfish as well as from a humanitarian standpoint, they should be furnished with modern, sanitary drinking fountains which will minimize sickness and time spent in using the old methods.

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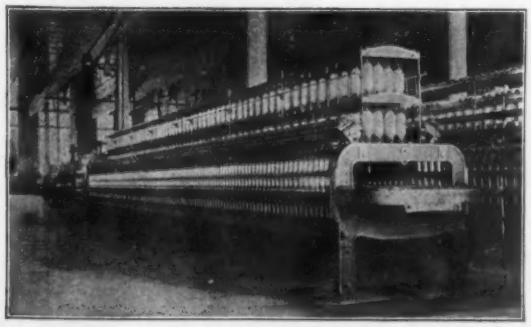
THE BROWN SPIN-WRIGHT



Commercial Frame

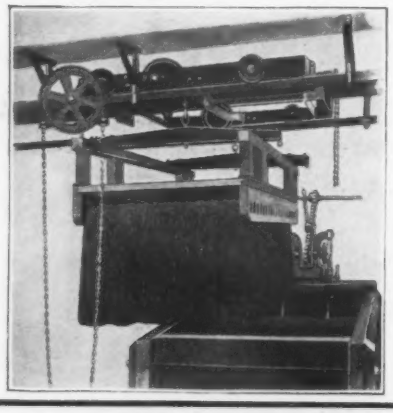
As Operated Successfully in a Large Mill

For Particulars Address

The Brown Spin-Wright Cotton Co.

32 Union Square, New York, N. Y.

A RECORD: 64 machines all running in one plant



TOP DYEING

Tops, slubbing, yarn and raw stock are all dyed in one and the same Hussong Machine, and with perfect uniformity.

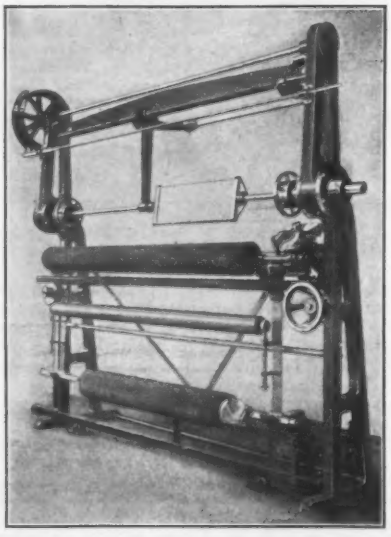
Made in 12 sizes, up to 800 lbs.

OUR GUARANTEE

Level Dyeing
Stock unimpaired in the least
Reduced labor cost
Reduction in steam
Two machines for little more than cost of one of other types
Repairs less than 1-4 cost with other machines

Hussong Dyeing Machine Company
Groveville, N. J.

Also Manufacturers of the Uniform Hosiery Dyeing and Bleaching and Warp Dyeing Machine



Our Automatic
Roving Can Spring

Made of fine quality spring wire adjusted to the same tension. The plate or follower is made of IXXX tin plate with rounded edges, avoiding all wear on the sides of the can. A half inch hole in the center of the plate prevents suction. The spring for satisfactory service.

Write for prices.

James Hill Mfg. Co.,
Providence, R. I.

The "NATIONAL" Doubling Machine

Requires less space and power than any other doubler and does twice the work

It measures the goods and puts tissue paper between the folds as well as outside

A. W. BUHLMANN
Textile Engineer
200 Fifth Avenue, - New York

Taking the Count Saves $ $

Put a Root Counter on the Job

And Prevent Waste, Errors and Disputes

Root Counters will register your output with uniform accuracy. They tell you just what a man or machine is costing. There's a "Root" for every use.

ROOT COUNTERS

All are guaranteed. Send for free trial offer.

Ask for Catalog No. 18

Capacities 10,000 to 10,000,000.

C. J. Root Co., 100 Morey St., Bristol, Ct.

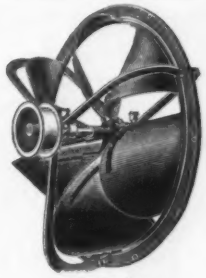
A BERRY WHEEL

Makes a Fogless Dye House

Because it puts the loose steam to rout—
It clarifies the atmosphere—
It removes the handicap of cold weather—
It helps the help keep up the production.
Moral: Use The Berry Wheel.

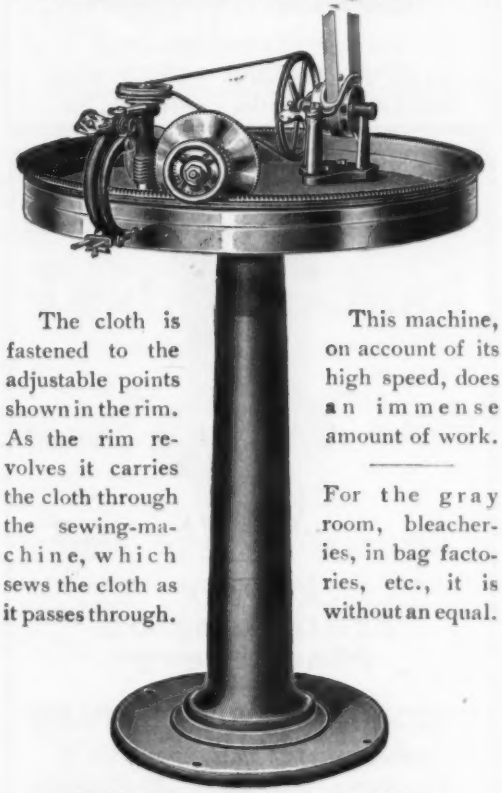
For Drying and Ventilating Facts, Write To

A. HUN BERRY, 29-33 West First St., Boston



This is the
BERRY WHEEL OR FAN
WITH NO BACK DRAUGHT
the most effective agent on the market for drying and for eliminating steam and other impurities from the air.

2000 STITCHES A MINUTE
THAT'S THE CAPACITY OF THIS
Power Circular Sewing Machine



The cloth is fastened to the adjustable points shown in the rim. As the rim revolves it carries the cloth through the sewing-machine, which sews the cloth as it passes through.

This machine, on account of its high speed, does an immense amount of work.

For the gray room, bleacheries, in bag factories, etc., it is without an equal.

Send for catalog of our sewing machines.
DINSMORE MANUFACTURING CO.
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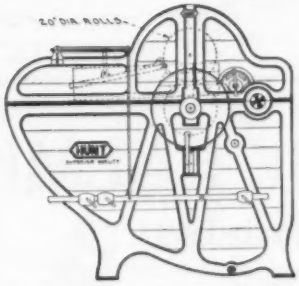
LATEST MODEL

TYPE M Double Braced Fulling Mill



The Mill with the **7 Exclusive** Features

Side Frames with M-Cross Braces giving greater strength and providing for much more secure fastening of side frames. Outside Compound Weight Arms controlling pressure of Packing Box Covers. Instantly adjustable from lightest to heaviest loads. Heavy Keyed Packing Box Levers outside of mill and connecting downward directly onto Covers with greatest leverage. Most effective Packing Box Construction with brass "wear strips." Adjustable bottom boards. Extra heavy design. Trouble Proof Bearings preventing oil stains. Self-aligning, assuring free running at all times. Stop Motion Frame counterbalanced, allowing instant adjustment to operate by lightest tangle or heaviest knot, as required. Fitted with positively reliable Friction Clutch Pulley of such simple design and construction that the most skeptical operators prefer after once using.

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86 Mill St., Orange, Mass.

POWELL VALVES

FIVE POINTS OF EFFICIENCY COMBINED IN THE POWELL PILOT GATE VALVE

¶ 1. Body and bonnet cast of a select iron of high tensile strength.

¶ 2. Metal distributed to meet the most wear.

¶ 3. Made in screwed and flanged ends.

¶ 4. Made in all iron for chemical plants, etc., or where acids attack brass.

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Made in sizes from ⅛" up to 6"

Ask your dealer for POWELL VALVES or write us.

THE WM POWELL CO.
DEPENDABLE ENGINEERING SPECIALTIES
CINCINNATI, O.

STEPHENSON BAR BELT DRESSING

PRESERVES BELTS - PREVENTS SLIPPING

Stop Belt Slipping Save Power and Fuel

by using

Stephenson Bar Belt Dressing

IT IS ECONOMICAL

because, made in sticks or solid form, all of it is applied to belt and none of it wasted.

One pound lasts as long as two pounds of any liquid or semi-liquid dressing.

Half pound sample sent free

STEPHENSON MFG. CO.
Main Office and Works, ALBANY, N.Y.

THE PALMER

Adjustable Thread Guide

Cheapest to Buy
Cheapest to Install
Easiest to Adjust
Absolute and Rigid Adjustment

Mail Guide Block for Free Sample

Patented and Manufactured by

THE I. E. PALMER CO.
MIDDLETOWN, CONNECTICUT

Power Transmission Machinery

CRESSON-MORRIS COMPANY
Successors to Geo. V. Cresson Co.
Engineers—Founders—Machinists
PHILADELPHIA, PA.

REVOLVATOR Reg. U.S. Pat. Off.

For the Quick, Cheap, Safe Piling and Unpiling of all Descriptions of Merchandise

This portable elevator cuts down labor bills, time consumed. Builds up warehouse efficiency.

Send for Bulletin W-28, "The Revolvator."

N. Y. Revolving Portable Elevator Co.
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Every Time You Paint a Roof You Repair It!

If you knew you would have to spend $180.00 every few years to repair your roof to preserve it and make the guarantee good, would you buy it? Painting *is repairing*, and it will cost $180 at the very lowest price to paint every 100 squares of roofing twice.

J-M Asbestos Roofing

is a little higher-priced than ordinary roofings—but its *first* cost is the *last cost*. Never needs paint, gravel or other protection. So it saves money in the long run.

Made of Asbestos (rock) and Trinidad Lake Asphalt—both minerals. Literally a flexible *stone* roofing. Gives excellent fire protection. Not affected by heat, cold, salt air or acid fumes. In ready-to-lay and built-up form. Suitable for all types of buildings. Users of rubber type roofings can get J-M quality in J-M Regal Roofing. Write our nearest branch for specimen of Asbestos Rock and Catalog.

H. W. JOHNS-MANVILLE CO.

Atlanta	Columbus	Louisville	Omaha
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THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED
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Philadelphia Textile School

TWENTY-NINTH SEASON

Oldest in America Most Complete in the World

Endorsed by the Leading Educators and Manufacturers

Cotton, Wool, Worsted and Silk

Instruction given in Designing, Weaving, Carding, Spinning, Chemistry, Dyeing and Finishing

Special Courses in Textile Chemistry and Dyeing

For illustrated Year Book and other information, address

E. W. France, Director
Broad and Pine Streets • • • • • • Philadelphia

Service—Not Sentiment

There are many types of belting—Leather, Rubber, Gandy and the belts resembling "Gandy" in general appearance and claimed to be "just as good but cheaper." When you buy belting you want to get the greatest service and the maximum satisfaction for the least money—the belt you want to buy is the belt from which you get the best results.

Buy Gandy and Save Money

The initial cost of the Gandy is only about one-third that of leather belting and much less than that of rubber belting, while it does the work equally as well.

The Gandy Belt is not an experiment. It has been on the market more than 35 years. The splendid results it is giving under all conditions and in every field of effort, warrants a careful investigation by you before *you* place your next order.

We will explain our proposition fully to you if you return the coupon below.

The Gandy Belting Company
747 W. Pratt Street, - Baltimore, Md.
New York Office, 36 Warren St.

The Gandy Belting Co., 747 W. Pratt St., Baltimore, Md.

Gentlemen:—Please send me without obligation, a sample of Gandy Stitched Cotton Belting, and all the information I need to give it consideration.

Name.....

Address (Street).....

City.....State.....

THE IDEAL WAY

to specify Steam Traps is to state working pressure and amount of condensation to be handled—then let the trap manufacturer select the proper size. The size of pipe connection of trap is no indication of its capacity—this is governed *entirely* by the size of valve orifice. Our Trap DATA booklet will interest every Steam Trap user.

Send for it.

American Steam Gauge & Valve Mfg. Co.

New York Chicago BOSTON Atlanta Pittsburgh

The Picker Plus the Condenser

Means LEADERSHIP for the DODGE →

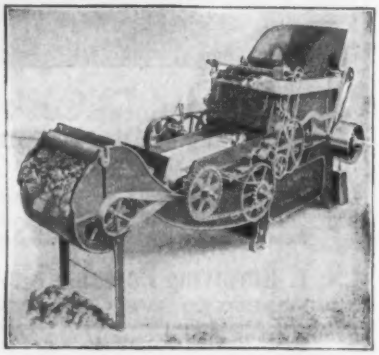
The Dodge Rag or Shoddy Picker with the Improved Condenser can do very fine or very coarse work equally well. Picked stock is always visible and (as it leaves the condenser in a lap) is easily removed. No fire-proof gauze room needed, therefore you save space and fire risk. Imported Ball Bearings used. "Bitt" atachment automatically returns bits and flyings to feed apron.

Ask for details

C. S. DODGE, - - Lowell, Mass.

Bagging Machines—Picker Pins—Cylinder Covering

"If Dodge Does It—It Satisfies"



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C. C. Bell, V. P., 12 Pearl St., Boston, Mass.

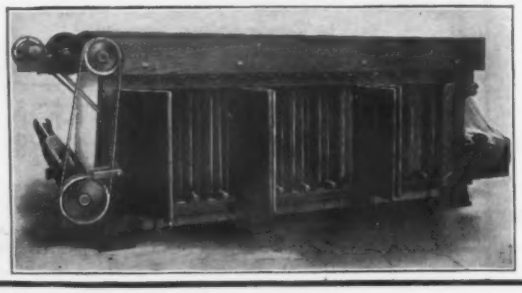
MANUFACTURERS

Laminar Fibre Roving Cans

All sizes, standard and special. Electrically Welded Tinned Steel or Fibre Rims. Steel or Wood Bottoms. Fibre or Steel Kicking Bands.

Strongest and Smoothest Can on the Market. In Use for 25 Years

Manufacturers Cooling AND Conditioning Machine



No finishing room should be without this machine. Indispensable for cooling cloth so as to permit of immediate inspection.

Finished cloth restored quickly to its **Natural Condition**

Manufacturers Machine Co.

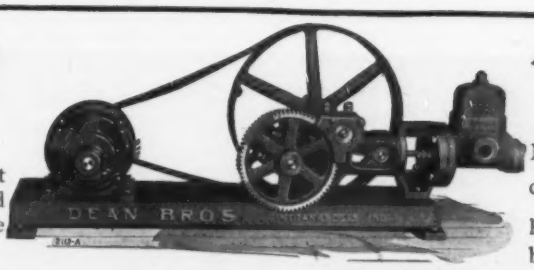
53 State St., Boston, Mass.

Selling Agents: EDWARD JEFFERSON & BRO., 122 So. Second St., Philadelphia, Pa.

Electric Pump

ARRANGED WITH BELT DRIVE

This pumping outfit is very compact and constructed to give long service.



All Parts Easily Accessible

Motor can be direct connected if desired or pump can be driven by gas engine.

New York Sales Office, 30 Church Street

DEAN BROS. STEAM PUMP WORKS **INDIANAPOLIS** Not in the Pump Trust

THE DOUBLE, BURNISHED OR DIAMOND FINISHED

RIBBED RING WHITINSVILLE MASS.

MADE BY THE WHITINSVILLE SPINNING RING CO.

THE BEST THAT EXPERIENCE CAN PRODUCE, THAT MONEY CAN BUY

Established 1870

John Heathcote & Son

Providence, R. I.

Builders of Improved

Cloth Tentering and Drying Machinery

for WOOLENS, WORSTEDS, FELTS, Etc.

Built Upright or Horizontal with Low Down Feed

Ventilating Fans a Specialty

Send for Catalogue

ASHWORTH BROS.,

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TEXTILE WORLD RECORD

Published on the 12th of each month by

LORD & NAGLE COMPANY

FRANK L. NAGLE, President. HENRY G. LORD, Treasurer.

SAMUEL S. DALE, Editor

Publication and Editorial Office

144 Congress Street, Boston

119 South Fourth Street, Philadelphia. 120 Liberty Street, New York.

537 South Dearborn Street, Chicago.

Entered at the Boston Post Office as Second Class Mail Matter.

Subscription Rates.

Textile World Record, in the United States and Mexico	$2.00 per year
To Canada, on account of extra Postage	2.50 per year
To other **Foreign Countries** (postage paid)	3.00 per year
Textile World Record and the **Official American Textile Directory** (Traveler's Edition)	3.00 per year
To Foreign Countries with Directory (postage paid)	4.00 per year
Dyer's Supplement	1.00 per year

Remit by Express Order, Postal Money Order, Cheque or Registered Letter to Boston Office

Advertising rates on application

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A Complete Directory of Cotton, Woolen, Knitting, Silk, Flax and Jute mills of the United States and Canada, together with the Dyeing and Finishing Works, Bleacheries, Print Works and other Textile Establishments; about 7,000 in all. Full information is given about each mill in almost every instance, viz., the name of the company or firm, names of officers, agent, superintendent, the character of goods made, the machinery equipment, i. e., the number of sets of cards (or combs), the number of spindles, number of looms; whether the mill uses steam or water power, whether there is a dye house or not, the names of the selling agents or if the mill sells direct. All this and much other information contained in this book is arranged in a way to be instantly accessible.

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The insistent demand of the consumer for Fast Colors makes it imperative that the Retailer, the Jobber, the Cutter-up and Textile Manufacturers recognize the question, Fastness of Colors, as a most important one

Indigo The introduction of synthetic Indigo by the Badische Anilin-& Soda-Fabrik in 1897 greatly lowered its cost, simplified its application and placed it on a scientific basis. The immediate practical result has been that Indigo is used on an ever increasing scale in the production of overall goods (denims) for working garments worn by artisans of all classes everywhere, as well as for navy blues with white designs, in percales, and similar fabrics which are so largely used the world over for women's house and working dresses. Nothing has yet been found which is as well suited as Indigo for these and many other purposes, since it combines minimum cost, brilliancy of color and satisfactory fastness. In fact, the word "Indigo" to the consuming public is a guarantee of a durable and satisfactory color.

Indanthrenes Unfortunately, however, Indigo produces only a Blue, while the trade requires every shade in fast and brilliant colors. To Dr. Rene Bohn, Director ot the Badische Antlin-& Soda-Fabrik, Ludwigshafen a/Rhein, should be given credit for the discovery of the series of dyestuffs derived from Anthracene, known as Indanthrene Dyes, which produce fast colors in every desired shade and tone. The introduction of these dyes in the cotton industry has created a new standard for fastness and brilliancy, in which combined respects they excel any colors heretofore known. Indanthrenes are actually permanent while the fibre lasts, meeting therefore every trade requirement, a fact so well demonstrated that today the word "Indanthrene" (pronounced In-dan-threne) is synonymous with "Fast Colors." There is probably no factor of greater importance in the manufacture of cotton goods than the fastness of the colors, in that it constitutes a most attractive selling argument, increases their popularity, and broadens the market for them.

BADISCHE COMPANY

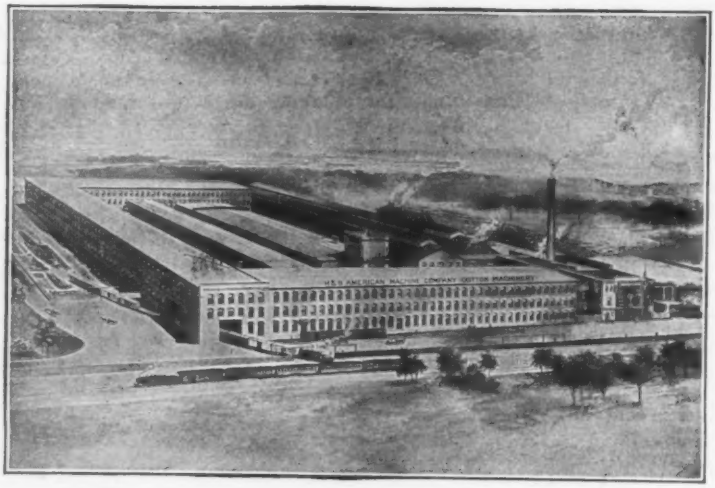
Contents for February

	PAGE
Monthly Comment	51
Hearings on the Paige Patent Bill	58
The Flax and Hemp Supply	65
The Wool Goods Market	68
Movement of Wool in England and Spain	70
The Situation in Germany	72
A Thin-Place Preventer for Looms	73
The National Association of Wool Manufacturers	74
CORRESPONDENCE AND NOTES	75
International Classification of Raw Silks by Its Defects—German Yarn Numbering—Quality Numbers for Worsted Tops—English Notes—Salidonia—A Hand Book of Weaves—The Making of Scotch Tweeds—A Thread Board for Spinning Machines—Spinning Fine Yarn.	
QUESTIONS AND ANSWERS	96
KNITTING DEPARTMENT	102
The Knit Goods Situation—A New Flat Seaming Machine for Knitted Goods—Thirty Years' Retrospect and Prospect of Hosiery—A Knitting Machine Needle—Defects in Knit Goods.	
DYEING, BLEACHING, FINISHING, ETC.	112
The Developer Situation—Aniline Black on Cotton Hosiery—Staining of Cotton and Wool Mixed Goods—Finishing Piece Dyed Woolens—Color Blending and Shade Matching—High Explosives vs. Dyestuffs—Shrinkage in Bleaching Cotton Cloth—Dye Recipes	
NEW MACHINERY AND PROCESSES	122
PERSONALS	131
NEW PUBLICATIONS	135
BUSINESS LITERATURE	135
INDUSTRIAL NOTES	136
RECENT TEXTILE PATENTS	143
TRADE-MARKS RECENTLY FILED FOR REGISTRATION	144
PUBLISHERS PAGE	160
MILL NEWS	171-208
WOOL MARKET	179
BRADFORD MARKET	181
COTTON MARKET	183
YARN MARKETS	185
RAG AND SHODDY MARKET	195
SILK MARKET	197
MILL STOCKS	205

Correspondence

We solicit correspondence on textile subjects. Articles accepted will be paid for. Name and address must always be given, not necessarily for publication. Subscribers are invited to make free use of our Questions and Answers Department; correspondence is strictly confidential.

COTTON MACHINERY



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TEXTILE WORLD RECORD

FEBRUARY, 1915

Monthly Comment.

Senator Reed and the Myers Bill

Senator Reed, of Missouri, who is chairman of the Committee on Manufacturers, sends us the following complaint regarding our criticism of the manner in which the Myers textile labeling bill was reported favorably to the Senate from that Committee:

> My attention has just been called to an article in the Textile World Record, appearing on page 55, of the January number, under the title "Studying the Textile Labeling Bills." You say:
>
> > "The methods by which the Myers bill was smuggled through the committee, show how little interest Congress is taking in the merchandise marks question. What is needed is an exposure of this neglect of the people's interests in order that the members of the 64th Congress may approach the problem with a proper sense of its importance."
>
> The facts are that this bill was introduced March 19, 1914, and referred to the committee on the same day. It remained in the committee until June 3, 1914. Shortly after the bill was sent to the committee, a sub-committee was appointed, and authorized to hold such hearings as was necessary, and to report out the bill. I was a member of this sub-committee, and from the time the bill went to the committee until it was reported out on October 13, I did not—if my recollection is correct, and I am quite positive—receive a single request for a hearing from any manufacturing or business interest. The author of the bill, and his colleague advanced arguments in support of a favorable report. There was also an expert from the Agricultural Department who presented samples, showing the progress in the manufacture of cloth. The bill was finally reported out on October 13 by Senator Pomerene, of the committee.
>
> Now this is the record. It seems to me that the statement from your paper that I have just quoted is, under the circumstances, wholly without justification, and that it should be corrected.

It is passing strange that Senator Reed's attention was not also called to page 53 of our January issue, where he would have found under the caption, "Pushing the Myers Bill" a statement of facts which not only justify the extract he quotes, but which show plainly that the correction should come from the Committee on Manufactures, of which the Missouri Senator is chairman. Senator Reed states that the Committee "did not receive a single request for a hearing from any manufacturing or business interest." Of course the Committee did not, for so far as we have been able to determine by diligent inquiries, no public notice of hearings reached the textile trade. It was known that textile labeling bills had been introduced by Congressman Lindquist, Murdock and Walker in the House, and by Senator Myers in the Senate, but the first intimation the textile trade had that the Myers bill was being considered by the Senate Committee was the news on October 14, about three weeks before the election, that the bill has been favorably reported by the Senate by Senator Pomerene, of Ohio.

Senator Reed's letter itself shows plainly the manner in which the labeling question

was neglected. The first misstep was the reference of the Myers bill to a sub-committee. Merchandise marks legislation is a question of the first importance, and yet when it came before the Senate Committee on Manufactures, it was referred perfunctorily to a sub-committee of three, Senators Reed, Pomerene and La Follette, which was authorized to consider and report the bill to the Senate. Senator Reed's letter also shows that the so-called hearings were a farce. He states there were three witnesses, one an expert from the Department of Agriculture, who presented samples to show the progress in the manufacture of cloth, a sort of kindergarten instruction in manufacturing; the others, Senators Myers and Walsh, both lawyers from Montana, a State larger than the Kingdom of Prussia, but with a population less than that of Kansas City and a textile industry consisting of a mattress factory and a mill for making flax tow.

The Pomerene report supplies more detailed evidence of the neglect of the question by the sub-committee. It bases the approval of the bill largely on two letters addressed to Senator Myers. One was from Carl L. Alsberg, chief of the Bureau of Chemistry, who told how to accomplish the impossible. He would distinguish shoddy by the absence of the characteristic wool scales and the presence of "different kinds of dyes." He would determine the amount of mineral loading in silks by the burning test, and was discreetly silent as to other kinds of loading. He ended by submitting reports of tests of some samples which he had picked up in his office, not one of which had the slightest bearing on the fundamental principle of the Myers bill, namely, distinguishing in manufactured goods the fibers that have been used previously in another fabric from those which have not. The other letter to Senator Myers was from Orator F. Cook, a bionomist in charge of crop acclimatization and adaptation in the Bureau of Plant Industry, who, without saying a word about fibers that have or have not been previously used in another fabric, offered this remarkable solution of the merchandise marks problem as applied to cotton:

> The simplest and most effective way to supply the public with the needed protection in the case of cotton would be to require that fabrics and other cotton manufactures carry marks or labels certifying the length of the staple of which they are made.

Besides quoting these letters to Senator Myers, the Pomerene report stated that the bill had been submitted to and approved by the Department of Agriculture, which had suggested nearly all of the amendments. After reading the Pomerene report we wrote on October 21, 1914, to Secretary of Agriculture Houston, protesting against the Department's endorsement of the Myers bill and also against the "expert advice" supplied from the Bureau of Chemistry and the Bureau of Plant Industry. An extract from Secretary Houston's reply is given below along side of one from the Pomerene report on the Myers bill:

Pomerene Report, Oct. 13	Secretary Houston, Nov. 6
This bill after its introduction was referred to the Department of Agriculture for its opinion thereon and views as to the need thereof and feasibility of its enforcement. The Department of Agriculture is heartily in favor of the bill. It approves the principle thereof and believes that it is enforceable.	The statements to which you refer were in response to a specific request from Senator Myers and were not intended as a complete discussion of the matter. . . .
Nearly all of the amendments recommended were suggested by the Department of Agriculture, which has taken an active interest in the bill.	The statements were prepared merely for Senator Myers' information and without specific reference to legislation. The Department has not been formally or officially consulted with reference to the bill.

This is the record which shows that our criticsm of the Senate Commitee on Manufactures in connection with the Myers labeling bill is completely justified and needs no correction. It is, however, quite plain from this record that the course of the sub-committee is greatly in need of explanation. The members of that sub-committee were Senators Reed, Pomerene and La Follette. The explanation, therefore, should come from them. We have not the slightest idea that either of them has intentionally misrepresented the Department of Agriculture

or lacks the ordinary intelligence necessary to recognize the inherent absurdity and unworkability of the Myers textile labeling bill

The Pomerene report is clearly the result of neglect on the part of men charged with an important public duty. It illustrates that indolent reliance by legislators on the supposed knowledge of experts in the Departments. During the past five or six years many important questions regarding textile manufacturing have come before Congress, notably the wool and cotton schedules and the various textile labeling bills, on which various Bureaus have advised the lawmakers. This advice has been an uninterrupted series of mistakes, marked by ignorance of the most elementary facts regarding the textile industry. Nevertheless it has almost invariably been accepted as sound because it was backed by the prestige and authority of the Government, and because the legislators could not or would not put forth the necessary exertion to inform themselves regarding the questions at issue. In this way the President and important sections of Congress were misled regarding the scoured content duty on wool. In this way the House and Senate were misled for three years regarding a tariff based on the highest yarn number used in cotton cloth. And in this way we find a Senate sub-committee, composed of Senators Reed, Pomerene and La Follete, has been misled into an indorsement of that venerable old fraud, the Myers, alias the Grosvenor labeling bill.

There is only one right course for the Pomerene sub-committee to follow, and that is to acknowledge that the favorable report on the Myers bill was a mistake, and to request that the bill be recommitted to the full Committee with instructions to investigate the question of marking merchandise of all kinds, and to frame a bill that will protect the American people against misrepresentation and fraud in the sale of all kinds of goods.

Fire Losses in 1914

The Boston Mfrs. Mutual Fire Ins. Co., in its annual report, has this to say regarding the losses for the year:

The fire loss for the year was the largest in the history of the Company, due to one large loss which occurred in June, viz., the total destruction of the Naumkeag Steam Cotton Company's plant by an exposure fire, which originated in a mill building over one mile distant and spread through the residential district of the city to the mill. The building in which the fire originated was of such a dangerous character, owing to its construction, occupancy, and lack of protection, that it was unfit for insurance in any company. It is stated that the condition in this building had been brought to the attention of the insurance companies insuring same, but with no results. The owners of the building, primarily, and the insurance companies insuring it, secondarily, are responsible for the conflagration which took place. The Naumkeag Steam Cotton Company was supposed to have ample protection against any fire which might occur, whether it started inside or outside the plant. Unfortunately, a portion of the fire apparatus broke down at a critical moment. This, combined with lack of assistance from the public fire departments, resulted in the total destruction of the plant. This is the only instance in the history of the Company of a member's plant being destroyed, or even injured to any extent, by fire from the outside. With the exception of the one loss noted above, the loss ratio of the Company has been one of the smallest in its history.

Number of claims reported	598
Total amount of fire loss, 446 claims..	$813,725.18
Largest claim	763,418.66
Smallest claim	.96
Average loss per claim	1,824.49
Sprinkler damage, 152 claims	11,669.43
Largest claim	5,205.85
Smallest claim	.69
Average per claim	76.77

Prize Essays on Silk

The Silk Association of America received about a year ago a contribution from one of its members which enabled it to offer cash prizes aggregating $800 for essays on the improvement of raw silk. These comprised a first prize of $200 each, three second prizes of $100 each, four third prizes of $50 each, and four fourth prizes of $25 each. A special committee appointed for that purpose recently awarded the four classes of prizes as follows:

First prize essay: International Classification of Raw Silk by its Defects—Warren P. Seem, Altoona, Pa.

Second prize essay: The Possibilities of a Rational Raw Silk Classification—D. E. Douty, New York; The Principle of Raw Silk Inspection—J. A. Scheibli, Easton, Pa.; The Test for Quality or How the Quality of Raw and Thrown Silks Can Be Measured and Standardized, With Some Suggestions for the Improvement of their Quality—H. W. Smith, New York.

Third prize essays: The Thrown Silk Market, its Uses, Abuses and its Future—D. S. Mercein and George M. Cossenas, New York; Japan Raw Silk, its Advantages, Defects of Quality and Suggestions for Overcoming Them, Also Other Recommendations—George M. Berlet, New York; Faith Among the Faithless—A. D. Simpson, New York; The Scientific Classification of Raw Silk—James Chittick, New York.

Fourth prize essays: Some Important Defects Which May Arise During Throwing, Dyeing and Finishing of Silk—Karl B. Lamb, New York; The Standardization of Japan Silks—Leo Duran, New York; Raw and Thrown Silks—George H. Seelig, Pittsfield, Mass.; Standardization and Representation of Thrown and Raw Silks—Stanley Boekhout, Astoria, N. Y.

The first installment of Mr. Seem's essay, which has been copyrighted by the Silk Association appears in this issue.

War Prices for Chemicals

The National Association of Cotton Finishers, 320 Broadway, New York, issued the following table on January 29, showing the prices on that date and before the war for chemicals used in finishing cotton fabrics:

Chemicals		Prices before the war	Present prices
Clorate of potash	lb.	.07¼	.19
Clorate of soda	lb.	.07⅞	.14
Prussiate of soda	lb.	.10	.15
Aniline oil and salt	lb.	.10	.65
Indigo	lb.	.14¼	.18
Para red	lb.	.16	No supply
Beta napthol	lb.	.10	*1.25
Methylene blue	lb.	.50	1.12
Tartrazine	lb.	.32	.92
Persian berry extract	lb.	.10	.15
Blood albumen	lb.	.17	.30
Flour	bbl.	3 50	5.75
Alizarines		Advanced 25%	
Aniline colors (when obtainable)		Advanced 25%	
Bleaching powder (domestic)		Advanced 10%	
Caustic soda (domestic)		Advanced 10%	
Acetic Acid (domestic)		Advanced 15%	
Gum tragacanth		Advanced 15%	
Tannic acid	lb.	.34	.52
Nitrate of soda	lb.	.06	.20
Dextrine (German)	lb.	.05	.07½

—*Practically no market, some offered at $1.25

The cost of colored papers, used in wrapping and putting up goods, has advanced from 10% to 20%.

The Park Bill to Prevent Fraud

Congressman Frank Park, of Georgia, has introduced in the House the following bill to prevent cheating and swindling in interstate and foreign commerce:

Be it enacted, Any person, natural or artificial, engaged in interstate commerce or in foreign commerce, who shall make, utter, use or circulate any false statement, verbal, written, or printed, in pictures, signs, or symbols, or in letters, circulars, posters, books, newspapers, or otherwise, as to the character, quality, quantity or value of any chattels, goods or merchandise being shipped or sold in interstate commerce or in foreign commerce with intent to cheat or defraud, and who shall thereby cheat or defraud any person whomsoever; or who, by any deceitful means or artful practices in interstate commerce or in foreign commerce with intent to cheat or defraud, shall cheat or defraud any person whomsoever, shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding $10,000, or in case of an individual or of an officer or agent of a corporation or of a partner, by imprisonment not exceeding five years, either one or both, in the discretion of the court.

The Park bill is to be commended because it is based on the principle of the British Merchandise Marks Act, in that it forbids the false description of goods without requiring merchandise to bear labels giving specified information. It is, however, open to the objection of being too general in character, which would make it difficult to interpret when applied to specified cases.

Wool, Tops and Yarn

The imports of wool, tops and wool yarn for the five months ending November, 1914, are reported by the Bureau of Foreign and Domestic Commerce as follows:

Clothing and Combing Wool, Free			
July	lbs.	13,680,588	$4,720,650
August		11,700,980	3,089,974
September		9,096,205	2,315,488
October		7,543,479	1,844,032
November		2,919,260	629,416
Carpet Wool, Free			
July	lbs.	6,150,565	$1,028,569
August		4,777,641	769,841
September		4,705,674	773,637
October		3,942,256	641,568
November		2,541,724	457,522
Mohair, 15 per cent. ad val.			
July	lbs.	309,250	$101,930
August		238,490	93,848
September		407,651	141,040
October		470,995	169,545
November		443,466	171,401
Tops, 8 per cent.			
July	lbs.	1,064,988	$578,152
August		369,230	191,774
September		563,477	270,546
October		433,688	192,899
November		193,878	79,848
Yarn, 18 per cent.			
July	lbs.	755,956	$544,974
August		307,825	223,713
September		277,355	186,235
October		374,420	247,759
November		83,234	66,712

Maximum Prices for Wool

While the German textile journals were protesting that maximum prices could not be fixed for wool, as had been done for foodstuffs, copper and other materials, the Bundesrat on Dec. 22, 1914, ordered that it should be done so far as wool and wool goods for the German army and navy are concerned. The journals that were most emphatic in the protests against maximum prices now publish the following decree without a murmur:

1. The price for 1 Kg. raw wool of every description must not exceed the following limits:

Raw Wool

AAA to A/AA	8.85 M	$0.964 lb.
A to B	8.30 M	.905 lb.
CI	7.50 M	.817 lb.
CII	7.00 M	.763 lb.
DI	6.55 M	.714 lb.
DII	6.25 M	.681 lb.
E	6.00 M	.654 lb.
EE	5.70 M	.621 lb.

2. The price for 1 Kg. must not exceed the following limits:

(a) Scoured Wool (including cost of scouring)

AAA to A/AA	9.30 M	$1.013 lb.
A to B	8.70 M	.948 lb.
C	7.70 M	.839 lb.
D	6.80 M	.741 lb.
E	6.20 M	.676 lb.

(b) Worsted Top

AAA to A/AA	9.75 M	$1.062 lb.
A to B	9.10 M	.992 lb.
CI	8.20 M	.894 lb.
DI	7.70 M	.839 lb.
DII	6.90 M	.752 lb.
E	6.60 M	.719 lb.
EE	6.30 M	.687 lb.

(c) Worsted Yarn 2/26, A to B

Dyed	11.65 M	$1.27 lb.
Undyed	10.90 M	1.19 lb.

3. The price for a meter of army woolen cloth must not exceed 10.75 M ($2.36 per yard); for a meter of navy woolen cloth, 11.75 M ($2.58 per yard), and for a meter of army worsted cloth, 12.25 M ($2.68 per yard). The prices are for men's wear fabrics.

4. The maximum prices applies to all materials found in domestic commerce. The Imperial Chancellor can make exceptions.

5. The maximum prices for wool (including tops) does not include the cost of transportation; for worsted yarn the maximum includes cost of delivery to the freight house nearest the weaving mill; for cloth, the cost of delivery to the buyer; for worsted top, the maximum includes the cost of transportation from Leipzig to the purchaser. The maximum prices are cash on delivery; for worsted yarn within 30 days from receipt, 2 per cent. discount; if payment is delayed interest is allowed at 1 per cent. above the discount rate of the Reichsbank.

6. This decree goes into effect on Dec. 24, 1914. The Imperial Chancellor will fix the date when exceptions go into effect.

Protection in England

Reports indicate that the British Government's scheme for establishing a dyestuff industry on British soil has failed to win the support of the trade. It was too narrow in that it sought to place the burden of establishing the business on the shoulders of the few who would voluntarily bear it, leaving their competitors free to purchase German dyestuffs at cut prices when peace was restored. The plan contemplated:

1. A limited company with a capital of $15,000,000, "to be subscribed by those interested," meaning the users of dyestuffs.

2. The Government to advance $7,500,000 drawing interest at 4 per cent., secured by a first claim and payable in twenty-five years.

3. The Government to appoint two directors of the company with power to veto any undue encroachment on the business of British manufacturers of products other than dyes and chemicals, or the giving of preference to consumers of the company's products. Stockholders to pledge themselves to purchase their supplies from the new company for a period of five years after the close of the war.

In other words the British users of dyestuffs are asked to invest $15,000,000 in an enterprise on which the Government would hold a preferred claim for $7,500,000, the stockholders being prohibited from giving themselves any preference in the purchase of products from their own company. Added to this is the certainty that with peace restored on the basis of free imports of dyestuffs, the British company would be forced to meet with the deadly competition of what is now the German monopoly, with the shareholders in the co-operative company pledged to buy dyestuffs from the British company for at least five years.

No wonder the British owners of dyeworks are coming forward, not with signed subscriptions to the capital of the company, but with protests against it. One of them, F. Cochrane, of the Peel Dyeworks, Newton Heath, who declares himself to be "a convinced free trade and in general politics a Liberal" voices his objections in a letter to the "Manchester Guardian," in which he states that after examining the Government plan, he finds it "not only impracticable, but a hindrance, and unfair in its distribution of the burden." Mr. Cochrane jars the free trade "Guardian" by boldly stating that "this is one of those cases in which an exception should be made in favor of protection, which would spread the incident of the burden." Tariff protection offers the only way in which the infant dyestuff industry can be developed outside of Germany. That the view taken by the free trade Mr. Cochrane of Newton Heath represents an important section of the textile trade in Great Britain is shown by the action of the Leeds Chamber of Commerce on January 5, which discussed and unanimously adopted the following resolution:

> Resolved, That the proposed scheme of a national company, assisted by Government money, to develop the coal-tar colors industry in the United Kingdom, would not, in the opinion of this Chamber, meet the difficulties of the situation, but would stifle competition and establish a monopoly. That this Chamber repeats its demand for a substantial import duty on coal-tar colors, to be imposed for some years after the close of the war. If this be granted the present manufacturers would largely extend their operations, other manufacturers, British and foreign, would establish works, and there would be a much-increased output. The competition within the United Kingdom would insure the consumers against excessive prices and be an inventive to British manufacture.

Another indication of the drift of British sentiment toward tariff protection is found in the decision of the London Chamber of Commerce to urge the Government to establish aniline dyeworks on British soil by a "guarantee of adequate tariff protection for at least ten years after the termination of the war."

Great Britain already has a working clause in her patent law so that the views of British protectionists are in line with those stated by Congressman Paige, of Massachusetts, a cotton manufacturer of Southbridge, at the hearing on the Paige patent bill on January 13:

> Personally, I believe the industry should be protected by a protective tariff. It would not do to raise the tariff, and then permit the dyestuffs to be made abroad, as out patent laws now permit.

The impracticable and unfair scheme proposed by the British Government is the result of an attempt to save their free trade scruples at a crisis that calls for the adoption of a protective tariff policy. Adam Smith, the father of what is known as British free trade, was hampered by no such narrow restrictions, and the statesmen who are now burdened by the heaviest responsibilities that ever faced a British Government may find their problem regarding a dyestuff supply much simplified if they will adopt the following rule from the "Wealth of Nations" published in 1776:

> There seems, however, to be two cases in which it will generally be advantageous to lay some burden upon foreign industry for the encouragement of domestic industry.
>
> The first is when some particular sort of industry is necessary for the defense of the country. The defense of Great Britain, for example, depends very much upon the number of its sailors and shipping. The act of navigation, therefore, very properly endeavors to give the sailors and shipping of Great Britain the monopoly of the trade of their own country, in some cases by absolute prohibitions, and in others by heavy burdens upon the shipping of foreign countries. . . .
>
> The second case in which it will generally be advantageous to lay some burden upon foreign industry for the encouragement of domestic industry, is when some tax is imposed at home upon the produce of the latter. In this case it seems reasonable that an equal tax should be imposed upon the produce of the former. . . .
>
> And there are two cases in which it will generally be advantageous to lay some burden upon foreign industry for the encouragement of domestic industry, so there are two others in which it may be a matter of deliberation; in the one, how far it is proper to continue the free importation of certain foreign goods; and in the other, how far, or in what manner, it may be proper to restore that free importation after it has been for some time interrupted.

With a textile industry producing $1,200,000,000 worth of goods for export alone, giving employment directly to over 1,000,000 operatives, and depending for its existence on $12,000,000 worth of dyestuffs, nearly all of which has been obtained from Germany, there does not appear to be much doubt that the Great Britain of today meets the conditions of the first case laid down by Adam Smith for the adoption of a protective tariff.

The Numbering of Yarn

It was inevitable that the war passions of Europe, which have been carried to such extremes as the banishment of German names from England, and English names from Germany, should eventually be directed against the weights and measures of the warring nations. It is not surprising, therefore, to find in a recent issue of the "Zeitschrift fuer die Gesamte Textil-Industrie," Leipzig, the article, of which a translation appears in this issue, in which the German hatred of things English is invoked in behalf of the substitution of the metric system of numbering yarn for the English system in both German and international trade. The writer of the article sketches the agitation to unify yarn numbering on a metric basis, but falls into some inexcusable errors. Germany is far from being the first to adopt a metric weights and standards measures statute. France was the first, having originated and established the metric system during the French Revolution. France was also the first to legalize the metric numbering of yarn, a French statute to that effect having been enacted in 1810, over a century ago. It proved a dead letter so far as cotton yarn was concerned, and owing to the opposition of cotton spinners it was changed in 1819 so as to allow the numbering of cotton yarn by a system based on the half-kilo, instead of the kilo, and which is in use in France today, increasing the confusion of yarn numbering on the Continent.

The statement that Japan adopted the metric numbering of silk in 1907 is also wrong. The Paris Yarn Congress of 1900 recognized the impossibility of changing the world's denier standard for silk, and finally adopted a resolution approving of the metric equivalent (demi-decigrams per 450 meters) of the denier silk standard. This of course left the denier numbers unchanged, just as expressing the denier standard in the English equivalent (grains per 635 yards) does not alter the fundamental standard itself. All that Japan did in 1907 was to accept that meaningless resolution by the Paris Congress.

The writer in the "Zeitschrift" places great reliance on national hatred as a means for unifying the numbering of yarn. Even if his estimate of its power were correct, it would work both ways, and a hatred of England in Germany, where English products and names are now boycotted, would be offset by hatred of Germany in England, where "German silver" and "German steel" must henceforth be known as "nickel silver" and "nickel steel.". The German writer, however, greatly overestimates the power and permanence of national hatred. Such a passion may impel men to great lengths, but it cannot give them the power to accomplish the impossible. For that reason it will fail to bring about the unification of yarn numbering on a metric basis. If yarn numbering throughout the world were in a state of confusion, there would be some force in the German contention. It is, however, far advanced toward uniformity. The numbering of cotton yarn outside of France is already based on a single standard of 840 yards per pound. Linen, hemp, jute and silk are also numbered by world standards. The greater part of the world's worsted production is spun by the English standard of 560 yards per pound. The only part of the world where confusion of yarn numbering prevails is on the war-racked Continent of Europe. Even there the confusion is caused, not so much by diversity in the standards for yarn numbering as by the diversity between these yarn standards and the metric weights and measures of the Continental countries. The German proposition means the transference of the Continental confusion to Great Britain and the United States in order that the Continent may have what we have now, uniformity between our weights and measures and our standards for numbering yarn.

The cry from Germany for the unification of yarn numbering on a metric basis is thus prompted by a local confusion of standards and by a disregard of the interests of other countries. The history of weights and measures teaches that unification of yarn numbering on a metric basis is impossible. Germany herself has found it impossible to avoid using the English system in her home

industries. The English system of yarn numbering is the basis of the German cotton yarn tariff today. At the last revision of the German tariff, German textile manufacturers appeared at the hearings to protest against a change to a metric basis, one of them declaring that such a change would throw the German cotton weaving industry into "heillose Verwirrung" (incurable disorder). That is the situation in Germany today, and no national hatred can change it. This war will end and in the course of time Germans and English will forget their old differences, as have the French and English, the Russians and Japanese, our own North and South. In war or in peace established standards of weight and measure are among the most enduring of human institutions. Such is the system of yarn numbering based on the English yard and pound, which is no longer national, but which encircles and belongs to the world.

Hearing on the Paige Patent Bill

Soon after the European war had directed public attention in this country to our dependence on Germany for drugs and dyestuffs, Congressman Calvin D. Paige, of the 3d Massachusetts district, introduced a bill to correct certain defects in our patent law which had contributed to the dangerous situation in which our industries are now placed.

CONGRESSMAN PAIGE'S STATEMENT

The bill was referred to the House Committee on Patents, and on January 13 a hearing was granted at which Congressman Paige, who is a cotton manufacurer at Southbridge, Mass., made the following statement:

There are three distinct propositions embraced in my bill:

First, the proposition of reciprocity with foreign countries in the granting of patents by providing that—

> No patent shall be granted to a citizen of any foreign country which does not grant a corresponding patent to a citizen of the United States.

Second, that a patent shall be granted only for the process of making a drug, medicine, or dyestuffs, and not upon the article itself, by providing that—

> No patent shall be granted upon any drug, medicine, medicinal chemical, coal-tar dyes or colors, or dyes obtained from alizarin, anthracene, carbazol, and indigo except in so far as the same relates to a definite process for the preparation of said drug, medicine, medicinal chemical, coal-tar dyes or colors or dyes obtained from alizarin, anthracene, carbazol, or indigo.

Third, the requirement that any patent relating to the manufacture of drugs, medicine, or dyes shall be actually worked in the United States within two years by providing—

> That in case any drug, medicine, medicinal chemical, coal-tar dyes or colors, or dyes obtained from alizarin, anthracene, carbazol, and indigo on which a patent has been granted is not manufactured in the United States within two years of the granting of said patent, said patentee shall have no right under the patent laws of the United States as against any citizen of the United States who may import such drug, medicine, medicinal chemical, coal-tar dyes or colors, or dyes obtained from alizarin, anthracene, carbazol, and indigo into the United States.

The facts as they exist at the present time are these. The imported dyestuffs are made by German chemists. The Germans patent the process at Washington. Every such patent has seventeen years of life. All the work is done abroad. The leaders in the American textile world have been clamoring for years for the amendment of the patent laws of the United States where the patented articles of processes are manufactured or worked exclusively or mainly abroad, and where the American patents are used simply to prevent the use of these inventions or processes in the United States.

The demand for compulsory working out of patents has made little, if any, headway in this country.

Now 90 per cent. of the German dyestuff makers are at the front, and even if there were dyestuffs sufficient for the demands of our manufacturers at reasonable prices, or even at prices not advanced by reason of the war, still to be had in Germany, this matter might continue as it has in the past.

But the present conditions have brought to the attention of our people a condition that ought not to exist, and these conditions have brought about this bill, which I believe to be a remedy for the situation. The textile mills are crying for relief. I assume that my friend, Metz, would say that relief is being granted, and that the mills

are getting a reasonable supply of dyestuffs. My information, however, does not lead in that direction, and I think I can prove my contention to the satisfaction of the committee that the conditions caused by the war, and the conditions that existed prior to the war, are not for the best interests of the manufacturers of this country who consume in a larger or a lesser degree dyestuffs

The biggest and the best customer of the German dyestuffs is the United States. The German chemist comes over here, registers his patent at Washington, and goes back to Germany to turn the patent into cash.

My idea is and this bill contemplates, that the German chemist should be compelled to establish plants in this country and manufacture the dyestuffs on American soil. Great Britain formulated just such an amendment to its patent laws years ago. The situation in the United States is bad, and is growing worse. In olden days the dyes used in textile mills were made from wood. Dr. Perkins, an Englishman, afterwards Sir William Perkins, startled the manufacturing world in 1856 by discovering that dyes could be made from coal tar. At that time Germany had a law that a German patent must be worked in Germany or it could be revoked.

Sir William Perkins therefore ran against two fatal propositions: First, the wonderful ability of the German in chemistry; and second, the compulsory working clause of the German patent laws.

The German chemists proceeded to build upon the Perkins invention, and as soon as they invented a new color they proceeded to patent it in the United States and Great Britain, as well as in Germany. Thus they have shut everybody off, and have controlled the British and American markets as well as their own. With their own great ability, their prowess in chemistry, and their protective patent laws, they have gained a world-wide monopoly of the dyestuffs situation.

Great Britain woke up a few years ago and added a compulsory working clause to its patent laws, and it is to the credit of the Textile World Record, a paper published in my State, that it took up the battle demanding that the statesmen at Washington stop protecting the German monopoly by the American patent laws.

The building up of a business in the United States, if this bill becomes a law, would of necessity be a slow process, but with American ingenuity, brains, and ambition given the opportunity, we would be enabled to make a success of this, as well as of any other great industry upon which this country has entered. Today, however, the United States patent laws make it impossible to demonstrate our ability in that direction. This bill would compel German or foreign manufacturers of artificial dyes to manufacture in the United States for the American market or else lose their patents.

Personally, I believe the industry should be protected by a protective tariff. It would not do to raise the tariff, and then permit the dyestuffs to be made abroad, as our patent laws now permit. I understand, but I do not know it to be true, that it is claimed that the German dyestuffs companies pay from 20 to 25 per cent. dividends, and have immense surpluses.

At the Democratic State convention in Massachusetts one of the planks in their platform called attention to this condition, this law as it had existed for forty years, and stated that they would use every effort to bring about the change which this bill contemplates.

Now, there is a great deal of opposition in many quarters to this bill, because they feel that it is to apply to all patents. It is not intended that this bill shall apply to all patents, but simply to the dyestuff industry. And there is emanating from some source—evidently from one source—opposition to this bill, because it is of the same nature, and the same citations, etc., are given, on the ground that it is going to interfere with the patent laws as applied to patents on other things. My object is only to remedy the conditions in the industries of Massachusetts and New England, which have suffered from their inability to get dyestuffs, which condition has been more particularly brought to notice since the present war began.

After Mr. Paige had explained his bill the following colloquy took place:

Mr. Metz—Mr. Paige's motives are all right, but his facts are all wrong. I would like to ask Mr. Paige who the manufacturers are that have not been adequately supplied with dyestuffs?

Mr. Paige—The finishing companies and the woolen manufacturers.

Mr. Metz—On the other hand, there is not one of them that has not got all they need. There is not one of them that has had to shut down for lack of dyestuffs. The dyestuffs are coming in in adequate quantities, and will continue to come in in larger quantities. This situation will not be helped, but will be retarded by this legislation. The mills know it, and there is not a single mill that will tell you that they have had to shut down.

Mr. Paige—Your information on that line is different from mine

THE PATENT TREATY WITH GERMANY

The discussion then turned to the effect of the Bacon-Bernstorff patent treaty of 1909:

Mr. Paige—Then there is another objection raised by some people, that if this bill is introduced now, Germany might not send us her dyestuffs; they might take offense at such a change being contemplated.

Mr. Metz—How is this bill going to help them?

Mr. Paige—I want to say, Mr. Metz, that I attended the conference at the Pan American Building, at which you were present, and you went out, at the suggestion of Mr. Bryan, to ascertain how many tons of dyestuff you would want brought over to this country, and so on; and after you went out I asked Secretary Redfield if he thought there was anything in this bill at which Germany or any foreign country could take offense, and he said no. I also asked the Solicitor of the State Department at the same time. So far as the objection to the bill is concerned, that it would have

any effect to lessen the amount of goods that Germany would send over, I do not think there is anything in it.

Mr. Metz—Secretary Redfield, with all due respect to that gentleman, does not know anything about that situation. What we wanted then was ships to get those goods in. The German manufacturers insist that the English shall not have any. They say that this is an industrial war that the English brought upon them, and they do not want the English to get any of these goods. I was a few weeks ago in the Interior Department at Berlin, and it was suggested that if we showed them a disposition to give them cotton they would let out increasing quantities of dyestuffs, but they insist that these things shall not be sold to their enemies. They insist that these goods shall not be used to help their enemies' industries.

Mr. Callaway—Are we to have a patent law in this country that will enable Germany to tell us that we cannot have dyestuffs unless we do certain things?

Mr. Metz—No; that is not the question. This is a war condition that is only temporary. We have the same rights to protection in Germany that they have here.

Mr. Callaway—Do you mean to argue that a man has a right to purchase a patent and hold it up here indefinitely, without any use of it so far as the public is concerned?

Mr. Metz—I mean to say that we have the same rights in Germany that Germany has here.

Mr. Callaway—And under the law as it is a German inventor has a right to do what he pleases with his patent, has he not?

Mr. Metz—Certainly.

Mr. Callaway—And nobody, even the Government that gives him that protection, can say, "Your rights are limited in this matter." They say, "We give you this patent protection in order that you may have the benefit of your patent." The fact of it is that under the laws as they are, according to Mr. Paige's statement, the patent may be used by him to keep the thing off the market and keep the public from ever getting any benefit from it.

Mr. Metz—That is not the question. If it is going to benefit the public and himself, he is going to make it. That is not the question here involved. This is a proposition of our treaty rights with Germany at present. Under our present treaty they grant our inventors the same rights that we grant theirs. That is the fundamental proposition involved in this. We have a great deal more interest in not carrying out these things in Germany than they have in not carrying them out here.

The patent treaty of 1909, which was negotiated and ratified immediately after the passage of the English working clause in 1907 had started an agitation for a similar law in this country, is as follows:

The provisions of the laws applicable, now existing or hereafter to be enacted of either of the Contracting Parties, under which the non-working of the patent, working pattern (Gebrauchsmuster), design or model carries the invalidation or some other restriction of the right, shall only be applied to the patents, working patterns (Gebrauchsmuster), designs or models enjoyed by the citizens of the other Contracting Party within the limits of the restrictions imposed by the said Party upon its own citizens. The working of a patent, working pattern (Gebrauchsmuster), design or model in the territory of one of the Contracting Parties shall be considered as equivalent to its working in the territory of the other Party.

This treaty means that a working clause in the United States shall affect a United States patent of a German invention only to the extent that the working clause in Germany affects a patent of a German invention in Germany; also that working an invention in Germany shall be considered equivalent to working it in the United States. This remarkable treaty, which, so far as Germany is concerned, evidently nullifies any working clause that Congress may enact, was negotiated in secret during the Roosevelt administration, signed on Feb. 23, 1909, by Robert Bacon, for the United States and J. Bernstorff for Germany, and made public by President Taft, who signed it on Aug. 1, 1909.

The compulsory working of patents was the subject of the following colloquy at the hearing on the Paige bill:

The Chairman—The next proposition of the Paige bill, I believe, is the matter of cumpulsory working, is it?

Mr. Paige—Yes, sir.

The Chairman—That the invention must be worked in this country.

Mr. Paige—After fifteen years of agitation by chambers of commerce, the British Parliament in 1907 woke up and wrote into English statute books the following decree:

> (1) At any time not less than four years after the date of a patent and not less than one year after the passing of this act, any person may apply to the controller for the revocation of the patent on the ground that the patented article or process is manufactured or carried on exclusively or mainly outside the United Kingdom.
>
> (2) The controller shall consider the application, and if, after inquiry, he is satisfied that the allegations contained therein are correct, then, subject to the provisions of this section, and unless the patentee proves that the patented article or process is manufactured or carried on to an adequate extent in the United Kingdom, or gives satisfactory reasons why the article or process is not so manufactured or carried on, the controller may make an order revoking the patent either—

(a) Forthwith; or

(b) After such reasonable interval as may be specified in the order, unless in the meantime it is shown to his satisfaction that the patented article or process is manufactured or carried on within the United Kingdom to an adequate extent.

Provided, That no such order shall be made which is at variance with any treaty, convention, arrangement, or engagement with any foreign country or British possession.

(3) If within the time limited in the order the patented article or process is not manufactured or carried on within the United Kingdom to an adequate extent, but the patentee gives satisfactory reasons why it is not so manufactured or carried on, the controller may extend the period mentioned in the previous order for such period, not exceeding twelve months, as may be specified in the subsequent order.

(4) Any decision of the controller under this section shall be subject to appeal to the court.

Mr. Metz—That is the statute; how has it worked out? That is the question. I know the history of that whole statute Dr. Baekeland probably knows better than I do. It has never worked out, and the English regret it.

The Chairman—How has compulsory working worked out in Germany generally?

Mr. Metz—In this industry? Germany has done all the working. But it has not worked in France, England, Russia, or anywhere else.

Mr. Callaway—Has Germany a compulsory working clause in her patent law?

Mr. Metz—She has on many things, I believe, but under our treaty rights we do not have to work there. We have the same rights there that she has here.

Mr. Callaway—What would be the result if we had had in this country prior to the present war a compulsory working clause that required the manufacture of dyestuffs to work their patents? Would we not have dyestuffs being made here now?

Mr. Metz—Let us take the practical situation. Germany makes all those things for the whole world. It is a one-country industry. We bring over about $1,000,000 worth a month; about $10,000,000 worth is the total importation of all colors to this country. The Germans have invested a hundred and some odd million dollars already in this proposition. America is not the largest consumer; China consumes much more of some products than America. Every country in the world is dependent on Germany for these products. Now, you can make in one or two plants enough to supply the whole world much cheaper than you would in a dozen different places. Of some colors, say, we use only 1,000 pounds a year in this country; you could not begin to put up a plant for that. You see, it is an economic question.

Then, there is the question of the intermediate products. You cannot devote your plant to the manufacture of one article exclusively. You have to go ahead and utilize everything that comes out, just as in the packing houses they are said to find a use for every part of the hog except the squeal. You must use all those by-products for some purpose. We would be using two or three of them here and not the rest of them.

Our textile manufacturers pay a duty of 30 per cent. or more—it used to be 30 per cent. and 50 cents a pound on coal-tar dyes when I first entered the business. We have never had to pay less than 30 per cent. duty, which is just as much more than the textile manufacturers in Germany or England have had to pay, and still there is no dyestuff industry in this country. Not 5 per cent. of the colors used today are patented, and at least half of those patents will expire within the next few years. Practically the only patents now existing are on some new fast colors. It is a question of the duty. Many of these products have been put on the free list to help our manufacturers here. Most coal-tar dyes pay a duty of 30 per cent. today; some, like alizarin and indigo, are free. The raw materials that have been coming into this country from Germany have been coming in free until the last tariff act. Our cotton and wool manufacturers, who have had to compete with the countries of the world, have had to pay 30 per cent. duty on these colors, and still we have no industry.

This is only a temporary proposition. We can get the colors. When the war first started we had no means of communication with Germany. If we had had such a law then it would not have helped us; if we had it today it would not help us. I sent all of you gentlemen a copy of the report of the committee on chemicals and dyestuffs of the American Chemical Society. This committee was composed of manufacturers in this country—people in the coal-tar business, the distillers, and people interested in all phases all along the line. The unanimous opinion of that committee was that this patent problem had no bearing on the question whatever; it was a question of duty and economics entirely. It is simply a question whether you want to pay a sufficient duty on those things, because the labor item is small. There is no such thing as a labor item in this thing, for it is all practically mechanical and automatic.

Mr. Paige—What have you to say, Mr. Metz, to the proposition that within a month after this act went into effect in England in 1908 it provided additional employment for 2,000 people?

Mr. Metz—I do not believe it did anything of the kind. I do not believe there are 2,000 people employed in the industry in England, so far as it affects dye products which the wording clause brought there. There were only two plants put up over there. I don't want anything of this kind forced on me. If it were a good thing, I would want it.

Mr. Paige—Do you manufacture in Germany also?

Mr. Metz—I do not; no, sir. I am importing from Germany.

Mr. Morrison—May I ask you, are you interested in any way in any manufacturing enterprise in Germany?

Mr. Metz—Not a penny; I simply buy goods over there and bring them here.

The Chairman—I do not see how this legisla-

tion would work to the disadvantage of anybody that happened to have patents that are not used in this country.

Mr. Metz—They would have to come here and build a plant.

The Chairman—Not unless they wanted to. They could forfeit their patents.

Mr. Metz—No; they would do like they did in England. They would make us pay for the amortization of that plant and figure it in the price of the goods made.

THE TEXTILE TRADE AND DYESTUFFS

Mr. Paige—I want to present to the committee Mr. Garcelon, the secretary of the Arkwright Club of Massachusetts, who represents all the important manufacturing plants in New England, some of the very largest. He is not here in favor of the bill nor opposed to it, but will state to you the conditions at the time I introduced this bill—that most of the manufacturers were of one accord and anxious for this proposition to pass—but now, through what I call the publicity bureau and the people who are opposed to this thing, they have come to be a little in doubt.

Mr. Garcelon—I represent the Arkwright Club of Boston, which includes the treasurers of cotton mills.

Mr. Metz—Will you please tell us which ones are interested? I have seen these men; I know all about them.

Mr. Garcelon—Perhaps after I speak a few minutes, Mr. Metz, you will be satisfied.

Mr. Metz—Certainly, if I may ask you then.

Mr. Garcelon—When this matter was first brought up it was at a time when there was great distress among the cotton manufacturers because they feared they were not to get dyestuffs, because they were not getting any importations, and they were fast using up the stock they had on hand. Some, of course, did go ahead and were well equipped; others were not well equipped, and they were looking about for any kind of assistance anywhere.

The question arose then as to whether some of these dyestuffs were made in this country. It was found that many of them were not. The proposition was then put forth that they should be made in this country, and that some bill similar to this would be advantageous and helpful. I myself, not having conferred with any of the practical men in the business, talked with Mr. Paige and told him at least it would do no harm to make a start on the matter and see if any good would come from it. I talked with two or three men who, without any study of the situation, said it would be a good thing. Since that early period of the war, matters have been congested in the dyestuff situation as in other lines. The dyestuff men have been exceedingly active in getting dyestuffs from Germany. I presume there are mills all over the country who are suffering from a shortage of dyestuffs. The reports that I have are that the dyestuff men are struggling very hard to look after their customers, and they are succeeding, I think, for the most part. The difficulty, perhaps, goes deeper than the dyestuff question, because the mills cannot sell their goods.

Mr. Metz—Certainly.

Mr. Garcelon—But if they could sell their goods here in this country or anywhere else they might buy more dyestuffs than they do. A good many of the treasurers and a good many of the millmen have been discussing this question of the dyestuff situation and the possible remedies. In view of the difficulties in which they are, they are naturally looking for relief and fairly immediate relief, because they want to get their dyestuffs, they want to get orders, they want to have good business within the next two or three years, because it is readily seen that a long period of depression will put a good many of them—those that are not well financed at least—out of business.

Since some of them have begun to study this question and since the dyestuff committee of the Chamber of Commerce of Boston has begun to study the question, a great many difficulties seem to have arisen, and a great many questions seem to have arisen as to the desirability of this legislation. I am not going to say that our organization favors or opposes this legislation, because it has not been thoroughly discussed in a session by the executive committee of the organization nor by the organization itself, and it ought to be thoroughly discussed by them before we take any decided stand.

Another question has come up to those who have investigated it, and that is the effect of this particular bill upon the 1909 treaty with Germany. It is said by some that that has no bearing on dyestuffs and chemicals, but relates only to machinery. I do not know about that, and I have not been able to advise our people as to whether that is so or not.

Another thing, it is claimed that the raw materials come from Germany, and that there are trade secrets there which would not be disclosed and which would not help us at all, if this clause went into effect, and that if manufactories were established here that it would not help us at all, because we would have to get our raw materials from Germany, and because of trade secrets.

Another vital thing——

Mr. Callaway—"Trade secrets?" That is wholly not understandable by me. What trade secrets? What kind of trade secrets?

Mr. Garcelon—I presume that there are certain concerns that have close corporations that have certain formulae that they do not even put into a patent, but that they keep right within the hands of a few members of their concerns and make certain dyes—certain chemicals—I assume that is so.

The Chairman—We have them in this country. Dr. Baekeland can verify that.

Dr. Baekeland—Secret processes.

Mr. Callaway—There is no use bringing that into a discussion with reference to a patent law, is there?

Mr. Garcelon—I do not see why not, if we want some things that are made by these trade secrets.

Another thing which vitally affects us is the cost of the dyestuffs to the mills.

The Chairman—What is the difference in the cost now and before the war?

Mr. Garcelon—I cannot tell you.

Mr. Metz—Ten per cent., plus the increased cost of bringing it over.

The Chairman—The cost is greater?

Mr. Metz—Double freights, marine war-risk insurance, which is about 15 per cent. extra on the cost of the dyestuffs. We have no steamers to bring them in. The steamship lines have raised the rates to double from foreign seaports, and insurance on one cargo was as high as 17 per cent.

Mr. Garcelon—Again, as to the cost to the mills there are two reasons perhaps which might prevail if this law went through satisfactorily. One would be that we might have dyestuffs at a less figure, and the other that we could get them in time of war like this. I presume that we would all say that probably for a good many years, at least, there would never be another situation develop exactly like the present one. This, perhaps, if it were workable and were satisfactory, would be a protection in a case of that kind.

But, coming to the cost of the dyestuffs in the end, it has been discussed both ways. Some people are claiming that such a law as this, even if it were developed, the building of some dyestuff manufactories here in this country would not be of any use unless you had a very high protective tariff on the dyestuffs. They say that if—mind you, I am not arguing; I am simply stating to you some of the things that are going through the minds of our men at home who are wondering whether this is desirable or not—in two years patents had not been worked in this country, and a group of men got together and said, "We will establish a plant and make those products here in this country. Germany, if she were not at war, would immediately lower her prices, would flood this country temporarily, and would put those concerns out of business, because of the long start they have, and that in the end it would cost us more for our dyestuffs—that she would make that up in the increase in price.

Mr. Callaway—Would not that be the same argument which sustains every monopoly on earth?

Mr. Garcelon—That is for you to say. I am not arguing now; I am saying——

Mr. Callaway—I am asking would it not? We are here to pass on the thing as to how it will affect this country, particularly the manufacturers of this country. Your argument is that it would not do any good to set up a great manufacturing establishment here, because the dyestuff manufacturers of Germany—the price monopolists—would lower the price and run this fellow out of business.

Mr. Metz—Mr. Callaway, might I say that has been exploded. They cannot do anything of the kind. They have to pay a duty on the market price abroad, and we have got to pay on that price, and nobody is doing business for fun.

Mr. Callaway—That does not have anything on earth to do with the question I asked Mr. Garcelon.

Mr. Garcelon—I can see arguments both ways. I can see that people could discuss that for many years, as they have discussed the question of a tariff for revenue or a tariff for protection. And so there are other questions that have arisen, but those are the main points.

As I say, I did not come here to take any definite side on the question. I would say this, however, that in view of the fact that the question has arisen so recently, that the developments have come so fast, and in view of the fact that we were in a rather excited state of mind during August, September and October about our dyestuffs—and I think Mr. Metz and some of the other people in the business know from the frantic telegrams and letters they received, and the calls, too, I presume—in view of that fact, and in view of the fact that we have been poking along and these men have been trying to look after us, and in consideration of these questions that have arisen, it certainly does not seem that any hasty action ought to be taken, and I have suggested to Mr. Paige that if no action is taken at present and the matter is put over so that I could bring him into conference with a number of manufacturers in Massachusetts, we could come to some agreement as to what is believed.

A PATENT ATTORNEY'S VIEWS

John H. Brickenstein, a patent attorney of Washington, then made a statement in opposition to the bill, and was sharply cross-questioned by members of the Committee:

Mr. Brickenstein—I just want to call the attention of the committee to the fact that this bill is making a fundamental attack on the general principle of the whole law under which patents are granted. It is not only an attack on that principle, but it is for the benefit of a certain few, and is class legislation of the rankest kind. The Constitution says that Congress may pass laws in order that inventors may be protected in their exclusive rights to their discoveries and inventions. It does not say "all inventors" but certainly "all" were meant. This bill says to a certain class of inventors: "We will let everybody else have protection, but you cannot have any." Why? Because some certain class think they will be benefited because you do not come in their way.

The Chairman—What would you say to making the bill general, making it cover all patents?

Mr. Brickenstein—the same objection—as to that I should make the same statement, because the Constitution says they shall obtain exclusive rights to their inventions. One of the most important types——

Mr. Callaway—Does that mean exclusive right to keep their inventions away from the public?

Mr. Brickenstein—For a limited term.

Mr. Callaway—The exclusive right to hold up whatever benefits may be derived by their putting their products on the market?

Mr. Brickenstein—They do not put their products on the market for fun; they put their products on the market for money.

Mr. Callaway—I know they do; but they do not put them on at all in many instances.

Mr. Brickenstein—If you will permit me to read an extract from a speech by Commissioner Thacher of Patents, in 1878, before the International Patent Congress at Vienna, whereby some of these very questions that have been raised here

will be answered; and he puts the statement on the reason why the Government grants patents at all.

Mr. Callaway—That is perfectly understood. Nobody need tell us that. Every schoolboy knows the reason why the Government grants patents. It is to stimulate men to exercise their inventive genius to develop new processes.

Mr. Brickenstein—Not a bit of it. That is not the purpose of the patent law, to simply develop new processes, but to disclose those processes; to give the public the benefit of what they know. Mr. Thacher touches on that.

Mr. Callaway—That is the difference between tweedle-de and tweedle-dum.

Mr. Brickenstein then gave his attention to the Bacon-Bernstorff patent treaty of 1909:

Mr. Brickenstein—As to the question of this treaty, the language of the treaty is as follows:

> The working of a patent, working pattern, design, or model in the territory of one of the contracting parties shall be considered as equivalent to its working in the territory of the other party.

The next clause says [reading]:

> This agreement shall take effect from the date of its promulgation and remain in force until the expiration of twelve months following the notice of termination given by one of the contracting parties.

So that this bill is in direct opposition to this existing treaty, and I might say that we only succeeded in obtaining this treaty concession from Germany after many years of hard effort, because this working clause in most foreign countries is a farce.

The Chairman—It is not in Germany, is it?

Mr. Brickenstein—Not in Germany itself.

The Chairman—Why do they not repeal all those working clauses in this country?

Mr. Brickenstein—They will.

The Chairman—When?

Mr. Brickenstein—It is a good thing to have up your sleeve to make bargains with.

Mr. Callaway—Why not put it up our sleeve?

Mr. Brickenstein—They have got it to make bargains with; they would drop it if every other nation would drop it, of course, they would.

The Chairman—Would the German people put a law on the books and keep it there if it was not worth anything? Those people are too thoroughly informed to do anything like that.

Mr. Paige—Just a word. Mr. Garcelon has stated that early in the fall, at the commencement of this war, the corporations which he represents, the largest corporations in New England, all were practically of one mind as regards the advisability of this bill

Mr. Garcelon—Not quite that.

Mr. Paige—But he did not go far enough. Suppose manufacturers were building high-priced plants here, there, and everywhere, and they were of one mind with the knowledge they had at this time that a bill of this character should be introduced. There are invested in eight branches of the industry known as the "textile industry" approximately $2,000,000,000 worth of capital; employing 1,000,000 persons, with an output of $1,750,000,000 a year. Those men were practically all of one accord as to the desirability of this proposition at the beginning of the war. He states to your committee, and I have no doubt it is true, that since that time they have been approached or they have got more information on this subject as to what their feelings are in the premises, and they will give some attention to it, but here is the Merchants' and Manufacturers' Association of Philadelphia who, in a long preamble, are in favor of this bill after having looked through it.

On Jan. 14 the Committee listened to a statement by Dr. L. H. Baekeland, president of the Inventors' Guild, and a chemical inventor, who opposed the Paige bill:

Mr. Baekeland—I am pretty well acquainted with the conditions and the working of the so-called compulsory working clause for European patents, because I have gone through all of it, and I saw their bad consequences. In most countries the so-called working clause is an absurd farce. In Belgium and Italy and Spain it is sufficient to advertise in the newspaper that you are trying to give a license or that you are trying to make commercial connections for working your patents; in other countries all that you have to do is once a year to make some kind of a manufacturing operation before witnesses, and have them sign a certified affidavit that certain operations have been gone through as specified, and then you are all right for another year.

The Chairman—Doctor, may I ask you a question before you leave the subject of compulsory working clause? How does that statute work out in Germany?

Mr. Baekeland—Mr. Chairman, I had several conversations on that subject with patentees and manufacturers over there. I took special pains two years ago to get the opinion of several competent people, and among them was the president of the German patent office. Practically without dissent everybody in Germany told me that the compulsory working clause there had proved of no value; and when I asked them, "Why do you not drop it?" They said, "for the simple reason that as long as we have this compulsory working clause we can use it as a retaliatory measure, as an act of reciprocity. We can keep it as a 'club' over the heads of England, of France, and of all these other countries which are still pressing us with the compulsory working clause, and if you Americans were smarter you would help us do the same thing by introducing a compulsory working clause, into your patent laws, with the provision, however, that the citizens of such countries do not compel Americans to work their patents in their own country would be also exempted from compulsory working of their American patents." He told me that this was the only reason why they decided to maintain the compulsory working clause in Germany.

I believe if anybody wants to introduce from that standpoint such a measure in our patent laws

as an act of reciprocity he can accomplish considerable good, but in that case this particular bill ought to be worded differently from the Paige bill. At one time your chairman introduced a bill of the kind, but the wording was decidedly ambiguous on that subject, and we inventors felt it our duty to protest, because as it was worded then it did not accomplish the particular result I refer to, and it was decidedly dangerous for American citizens while beneficial for German inventors; in other terms, it would have conferred a boon upon foreign inventors, especially the German inventors, but it would have acted to the detriment of American inventors, and I hope that some day or another some member of this committee will take up that matter again and rewrite a bill of that kind, but with the proper wording, so as to make it act as a reciprocity law.

Mr. Metz—In other words, Doctor, the same as the German law?

Dr. Baekeland—Yes, sir; the same as the German law.

The hearing was continued on January 28. Jacob H. Reyfuss, representing the National Association of Retail Druggists, supported the Paige bill. He referred to the testimony of the opponents at the previous hearings that the conditions are not favorable to the development of the dyestuff industry in the United States; that there is a lack of materials; that the coke ovens are not suited for collecting the tar product; and that existing law offers no obstacles to making application for patents. This led Mr. Reyfuss to say:

If that is all true, then why should these gentlemen oppose the sort of legislation proposed in the Paige bill? I presume that had the gentlemen come before a congressional committee of 40 years ago, having under consideration legislation which might have affected the chemical industry of that time, they would have advanced the same arguments in regard to sulphuric acid, hydrochloric acid, soda ash, chlorine, etc.

We must not be misled by such pessimistic statements. No person ever learns to swim unless he has access to water, and so the achievements of the American chemist can never be fertile until an opportunity has been given to exercise his individual agency.

When the present war began last August there was great scurrying about to obtain supplies of these patented synthetic chemicals. It was believed by many that the supply of them would be shut off completely as the war progressed. Prices soared skyward, but the expected did not happen, thanks to the enterprise of our importers. Supplies were obtained from abroad and prices receded to normal.

Dr. F. E. Stewart, representing the Merchants and Manufacturers Association of Philadelphia, stated that the Paige bill would remove the obstacles that now prevented chemists from engaging in research work in this country, and that it would lead to the establishment of the dyestuff industry here.

Congressman Kreider made a statement in support of the bill.

Congressman Metz again opposed the bill, stating that it would serve to anger the Germans and cause them to stop shipments of dyestuffs to the United States. He added that the benefits would not materialize for many years and then only by the aid of a prohibitive tariff on dyestuffs, making the cost very high to manufacturers in this country.

THE FLAX AND HEMP SUPPLY

BY CHARLES RICHARDS DODGE

From the information obtainable it is very evident that the American demand for flax and hemp, when the present stocks are exhausted, will far exceed the supply. What the manufacturers will do to make up the shortage is probably known only to themselves. Nevertheless, a certain supply of both fibers will be available for export from Europe in the immediate future. The larger part of the imported flax used by American mills comes from Russia, this being a low to medium grade of fiber, usually costing 7 1/2 to 10 cents per pound, the Russian crop, in good years, exceeding 560,000 tons (of 2,000 lbs.) Speaking of Russia as a whole, the crop of 1914 is reported as "safe," although the yield has been far below normal. Over a month ago London brokers reported that flax was already coming in via Archangel. From the Riga district comes the information that the crop of 1914, in that part of Russia, is estimated at 170,000 tons, against a yield of 338,700 in 1913. Of this amount at least 97,000 tons will be available for export, the remainder being required by the Russian mills. Prices for the better grades show a 30 per cent. advance, though it is said that low and medium grades will rule about the same as a year ago. The export figures for the crop of 1913 are 260,000 tons. The hemp crop, also short, is estimated at about 64,000 tons, though the quality is better than in the pre-

vious year. The war has not as yet affected the hemp districts. It is estimated that about 50,000 tons will be shipped out of the country next May, via Archangel, this port being very uncertain during the winter.

Italy can be depended upon for a reasonable demand for hemp, though at prices considerably advanced over those of the previous year. The crop of 1913 amounted to about 90,000 tons, and that of 1914 is estimated to be quite as large. The fiber is produced chiefly in the provinces of Emilia, Compania, Venetia and Piedmont. A total of 100,000,000 pounds per annum is regularly exported from Italy, the United States taking over ten million pounds. I am informed that "export is now permitted, and will be, until the total of 88,184,890 pounds is reached, this being the maximum allowed to be sent out of the country, owing to peculiar circumstances originated by the war." Late market quotations show a range of $250 to $325 per ton. Whether the manufacturers will be able to use much Italian hemp at these prices to fill the gap caused by the shortage of Russian low and medium grade fiber, is a question which they only can answer. In normal years Italy produces some six million pounds of flax, though it rarely figures in our flax imports.

Nothing could be learned regarding the flax crops in Northern France, or of the hemp crop of Brittany, although efforts were made to secure official information. France usually produces something like 45,000,000 pounds of flax, annually, largely grown in the department of Nord—which is in the Lille district. Whether or not any flax was saved in Belgium, of the crop of 1914, I cannot learn. Under normal conditions there would be a two years' stock on hand, but it has been reported to me that the Belgian flax supply has been "commandeered" by the Germans, so the present available supply from this source may be represented by nought. Some flax in the Courtrai district may have been steeped, but it is hardly possible that any of it has been scutched. As the river Lys is in the war zone not much of the crop could have been harvested. The Belgian crop amounted to 64,000,000 pounds in 1912.

I have been unable to secure any official statements regarding the Netherlands flax crop for 1914, but it is reported short, the yield in a good year approximating 25,000,000 pounds, which at best would allow but a trifle for export to the United States. The Irish crop is also short, the report coming from Belfast that the yield is considerably below the average. The crop of 1912 was a litte less than 30,000,000 pounds. The falling-off in yield last year is due in a measure to a very dry season, which has prevented the stalks from attaining their full length. The quality is up to average, but prices rule high. The Irish spinners are expecting a shortage of supply this year, as no flax is coming from the Continent. Heretofore considerable flax has been received from Courtrai, and as a large part of Netherland's crop, in recent years, has ben sent to the Lys to be steeped, doubtless the "Irish supply" has included a lot of Dutch flax also. If a sufficient supply of seed can be obtained the area sown in Ireland the present season will be considerably increased. With so short a supply in Ireland as the reports indicate, American spinners may expect little help from this source until the conditions change.

I have no reports from other flax growing countries of Europe, which, under normal conditions, produce flax crops, as follows: Austro-Hungary (in 1911), 68,000,000 pounds; Bulgaria (in 1912), 800,000 pounds; Servia (in 1911), 2,000,000 pounds; Sweden (in 1911), 1,500,000 pounds; Roumania (1912), 5,000,000 pounds. A significant statement regarding the hemp supply, in a letter received from London, is to the effect that India comes to the rescue in filling a part of Russia's wants.

The story of the "American supply" of both flax and hemp, is a pitiful tale with little promise for the future. In former times Canada has produced good flax, and while in no great quantity, it has helped. In the past few years, however, the crop has been falling off both in quantity and quality, and the crop of 1914 will not go much over 150 tons. A prominent American spinner who has recently visited the flax region of Canada informs me that this is due to want of care in

harvesting, mixing the straw from different fields, want of care in the retting and scutching, the result being an inferior fiber and a lot of tow. It is stated that here is some talk at Ottawa of employing a flax expert to give advice to the mill owners of Ontario, in the hope of bringing about improved conditions. From another source comes a further statement regarding the Canadian industry which is even more discouraging. "In Canada, like Michigan, the growing of flax for fiber is almost a thing of the past, for fully 75 per cent. of the mills have discontinued or are utilized for other kinds of buisness." Another correspondent states that it is costing the Canadian producers 6 to 7 cents to convert, and the prices realized are not sufficient to make it a good financial transaction. The Canadian dew-ret has run considerably to tow, with a decline in strength and quality. He adds that it is yet to be determined whether the war in Europe will have a stimulating effect on the Canadian industry for the reason that the producers do not pay much attention to the affairs of the outside world.

Reports concerning the culture of flax within our own borders are equally discouraging. At one time the industry was pretty well established in Michigan, particularly in the region around Yale, where some very good fiber was produced, but with the continual increase in the cost of production, and particularly under the present tariff, the growing of flax for fine fiber has had to be discontinued. A large part of the present season's crop will be turned into upholstery tow. From the Port Huron district comes a more encouraging story, although it should be stated that here the industry has been put upon an entirely different footing by the development of a whole line of machinery which places the production on "an American basis" of working—machine pullers and field threshers, quick-retting apparatus and drying machinery, breaking-out machines, and machine scutcher in process. The results of this practice are said to be a fair fiber at a greatly lowered cost of production—a fiber that has won good reports, not only at home, but from British spinners.

I cannot learn that much of anything is being done with the culture outside of Michigan. Certainly nothing is being done in Oregon, where good flax has been grown, as a letter addressed to the company supposed to be operating at Salem, was returned to the writer by the postal authorities unopened. Regarding the culture of hemp in the United States the industry seems to have gone to "the demnition bow-wows" with the American flax culture. In Kentucky, where for a century good crops of hemp have been produced, the smallest crop on record is reported for 1914. A correspondent places it at 600 tons. In Missouri and Indiana the amounts produced do not seem to have been worth recording, judging from the replies of state officials. California is credited with 60 tons, which so far as the American supply is concerned, is hardly a drop in the bucket. I do not hear that there will be any appreciable increase in acreage this year, although when our Kentucky friends learn that imported hemp is fetching 12 cents per pound they may brace up and seed down a few extra acres. The decline in Kentucky is said to be due mainly to the effects of the tariff, and to the fact that tobacco is a more remunerative crop. Commenting on the hemp situation Mr Dewey, of the Department of Agriculture, in a recent letter, says:

> One of the most promising features of the situation at the present time is the supply of seed of good quality being produced in Kentucky. I have received a letter from Messrs. Glass and Glass, hemp-seed growers at Camp Nelson, Ky., stating that they have about 1,200 bushels of seed of Minnesota No. 8 variety, which has been developed by selection at the Minnesota Experiment Station and this Department. The seed plants of this varietv in our seed-breeding plat this past season analyzed 3.05 meters high.

Regarding the flax acreage in 1915, I understand that the Summers Linen Co., of Port Huron, will endeavor to increase their yield from 100 tons of fiber last year, to 350 tons, but it is doubtful if there will be any attempts to increase the acreage in the Yale region, where 700 acres were under culture in 1914. Nor is there any evidence of an increase in area in Canada. Regarding the stocks of planting seed, Mr. Summers of

Port Huron makes an interesting statement as follows:

> There is no estimate on seed to go in the ground. Most of the planting seed for Canada has been imported from Holland through my connection, and instead of importing this year, we are exporting to them. We have already shipped two car loads of planting seed to Belfast and will probably ship more.

Mr. Coey of the Barbour Co., who reports the shipping of Canadian seed to Dutch jobbers, and adds: "Present indications are that we may be short of seed for the Irish crop, which should show a large increase next year" (1915).

Considering the discouraging situation hinted at in the foregoing, what may be said regarding the future of the American flax and hemp industries? Perhaps the least said the better. Possibly the practice followed by the Summers Linen Co., at Port Huron, as indicated above, may eventually set the pace for future endeavors and lead to the establishment of a new American practice that may yet work out the problem—a practice involving the use of labor saving and time saving devices all along the line, to the end of reducing the cost of production to the minimum—and beating the tariff. Meanwhile, if Lord Kitchener's prediction of a three years' war should prove correct, where will the mill men secure their necessary supplies when the present surplus stocks are exhausted? It might be argued that "half a loaf is better than none," although with the shortage everywhere in Europe—of flax at least—and with the European demand for fiber, even the half loaf is not altogether a sure thing. Unless cotton and jute could be substituted for flax and hemp some lines of production must be curtailed. We have cotton "to burn." India's last jute crop is a large one, and both fibers ought to be cheap, especially with so many markets in Europe closed against them. However, I am not advocating an extension of the employment of jute in manufactures that ought to be made of better fibers, as I have sins enough to answer for already. But perhaps the war will not continue three years, and things will take a turn for the better.

In conclusion special acknowledgments for information received are due to Consuls General Thackera at Paris, France, and Jones of Genoa, Italy; to Consul Sharp of Belfast, Ireland; Consul Jenkins, Riga, Russia, and to Ide & Christie, Fiber Brokers, London; also to Mr. Coey of the Barbour Flax Spinning Co., Newark, N. J.; Mr. Summers of Port Huron, Mich.; Mr. McCall of the James Livingston Co., Yale, Mich., and to Mr. Wolsey of the Clare Knitting Mills Co., Saginaw, Mich.

THE WOOL GOODS MARKET

New York, February 1, 1915.

The market for woolens has been in a very unsettled condition and the openings of new lines are from four to six weeks later than usual. The disturbing factor has been the shortage of wool and shoddy. Many million pounds of these stocks have been worked up into fabrics for the allied armies, consequently the stocks have been depleted to comparatively small quantities that are left for domestic consumption. It is reported that some goods have already been sold for which wool cannot be purchased except at prohibitive prices. Making sales of woolen fabrics for the new season, without first securing the wool for their manufacture, is a gamble that no manufacturer should take. If wool manufacturers can be assured of the continued imports of wool it will relieve the situation regarding prices for fabrics now being placed on sale. Some are advocating the taking of orders for later deliveries "at value," they consider that it would be extremely dangerous to accept orders for delivery a few months hence, at fixed prices.

A sudden termination of the war is another possibility for the trade to consider. Clothing buyers are always ready to take advantage of lower prices, regardless of the fact that goods are in process on their orders given when the cost was higher, they not only refuse to accept the goods, except at the lower prices, but take only what they require at the time.

Many buyers do not seem to realize the seriousness of the situation and argue that

they have always been able to get all the goods they need and at fair prices. The present is a time when they are more likely to learn that at last they have reached a season in which the supply of woolens and worsteds will be limited, and at constantly advancing prices. A number of mills are employed making army goods. Some of the larger companies are running hundreds of looms making khaki cloth with worsted warps and carded wool filling, while the cassimere mills are running hundreds of other looms making carded woolen khaki cloth.

During the early part of January buyers generally showed extreme apathy regarding purchases of woolens for another season, but during the latter part of the month there has been evidences of an awakening and a realization of the situation.

It is stated that a few manufacturers have been fortunate enough to secure fair stocks of wool and shoddy below the prevailing prices. If so, they have an opportunity to do a profitable business and should sell up to their full capacity.

During the month more lines of three-quarter goods were placed on the market, and the agents report a large number of sample piece orders mostly from the clothing jobbers, the regular clothing trade are only getting to work on placing orders.

The craze for mackinaws has continued and some additional lines were placed on sale and met with satisfactory results. They have been the most freely sold fabrics up to the present time. Prices on some lines were again advanced during the month.

The various lines of overcoatings, which usually have been sold in December, were placed on sale during the latter part of the month. Prices generally range from ten to twenty per cent. above those of a year ago. Some have found it necessary to advance above the opening prices. It is understood that these last advances were caused by the advance in prices for wool and shoddy and not from excessive orders.

The event of most importance was the opening by the American Woolen Co. of their lines of staple and fancy overcoatings, some of the fabrics being new this season. Buyers commented very favorably on the styles and colors and they were also favorably impressed with the prices, as many of them showed smaller advances than they anticipated they would. Their advances range from 5 to 25 per cent. on one line, which is presumably the same fabric as heretofore sold by them. The fabrics made from fine wool show but small advances.

The opening of these goods seemed to be the signal for the clothing trade to begin buying, and it is reported that the first three or four days' sales were satisfactory to the company.

Other lines also shared in the order business and a fair trade was done by a number of selling agents.

Prices on most lines are subject to advances without notice, which is essential for those not covered with stocks of wool and they are said to be in a decided majority.

Practically all the leading lines of serges have been kept off the market. Some makes have probably taken a few orders from large buyers for the goods. It is probable that some of the well-known mills will not make their usual lines of serges on account of having large contracts for worsted warp khaki cloth. They doubtless will offer a few samples of serges, but not their usual large lines. Several lines of lower grade serges have been open for several weeks with considerable business booked. In one or two instances advances in prices have been made over the spring prices.

Some samples of coverts for the new season are being offered, and are expected to receive important recognition from the clothing trade. They, however, are more popular for spring coats and have had a fairly successful duplicate business during the last spring season.

A few lines of medium grade carded wool suitings have been on sale for two or three weeks and have secured considerable business from the clothing trade. Indications seem to point to an increased demand for wool fabrics.

Openings of the better grades of fancy woolens and worsteds for the clothing trade have been postponed from time to time and

they will be held off the market as long as possible or until a more favorable time develops.

The tendency to fancy styles and novelty fabrics has continued to develop and indications are that such effects in new colors will be in demand at the expense of staple colors, and fabrics. Several lines of such effects have been prepared to meet the situation and will soon be placed on sale.

There have been but few openings of dress goods, the principal opening has been that of the Pacific Mills making many narrow goods, principally for the dry goods jobbing trade, advances in prices are from one to five cents per yard. It is reported that a good business has been done for the short time the goods have been offered. A fair duplicate business has continued for the spring season now nearly over, the demand has been largely for gabardines. Coverts have been quite successful. Fine goods have done a more satisfactory business than usual on account of their limited importation.

Many lines of cloakings are being shown with varying success. The orders, especially for fancies, are for sample pieces only, many of which have been booked. The fancy styles being sold are more pronounced than they were a year ago, both in plaidings and colors. A number of English fabrics are being offered for both women's and men's wear and it is yet to be determined as to what importance they will cut on the market, the uncertainty of future deliveries will cause buyers to hesitate about placing orders for deliveries several months hence.

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During the month of August, 1914, there was 10,916,718 lbs. of cotton valued at $1,306,117 exported from the United States as compared with 136,954,696 lbs. valued at $16,518,761.

The number of cotton spindles returned as having been operated in the United States during the year ending Aug. 31, 1914, was 32,107,572, exceeding the number for the previous year by 587,806. There were 636,440 spindles returned as idle and as having consumed no cotton whatever during the year.

MOVEMENT OF WOOL IN ENGLAND AND SPAIN

BY DR. D. E. DOUTY.
Manager United States Conditioning and Testing Co., New York

A fair impression of the state of the woolen and worsted industry in Europe during the past four months may be obtained by considering the amount of work done at the various conditioning houses. Reports from Verviers, Roubaix and Mazamet have not been received, but those from Bradford, England and Tarrassa, Spain, are quite interesting, the one representing one of the belligerents, the other an adjacent neutral country.

Of the wool consumed in the Bradford district about 60 per cent. passes through the Bradford Conditioning House. The proportion passing through the Tarrassa house to the total amount consumed in the region is not known, but from the volume it would seem reasonable to consider it as representative of the total.

TABLE I.
JULY.

	1914. Lbs.	1913. Lbs.	1912. Lbs.
Tops	6,987,616	6,389,160	7,418,598
Wools	827,521	1,102,594	814,121
Noils	981,712	630,100	476,314
Wastes	678,690	573,646	406,836
Worsted Yarns	396,467	250,748	286,980
Cotton Yarns	10,270	8,642	17,928
Silk Yarns	2,920	1,954	4,097
Goods weighed only	218,362	132,421	85,076
Totals	10,103,558	9,089,265	9,509,950

The state of business in the Bradford district just before the declaration of war may be compared with previous years by comparing the movement through the conditioning house for the month of July. Table 1 furnishes an opportunity for this comparison. Tops and wools in 1914 were about normal, the latter showing a small decrease over 1913 and slight increase over 1912. Noils and wastes show a very substantial increase; noils 56 per cent. over 1913 and 106 per cent. over 1912; while waste increased 18 per cent. over 1913 and 91 per cent. over 1912. Worsted yarns increased 58 per cent. over 1913 and 38 per cent. over 1912. As a whole, over one million pounds more material passed through the house in July, 1914, than in July, 1913, and about one-half million more than in 1912.

Without following the items it is at once evident that there was a loss of about 73 per cent. in August, 47 per cent. in September, 27 per cent. in October and 50 per cent. in November.

It is remarkable that a great industry which had received such a severe blow should within the short space of four months show under most adverse conditions such wonderful recovery.

August and September over July is converted into a substantial increase in October and November. It is interesting to know that the Spanish textile manufacturers are so progressive in the control of their raw materials that they have adopted standard regains and are maintaining a conditioning house capable of testing each month from one million to a million and a half pounds of materials. In America we are inclined to

TABLE III.

	1914.					
	June Lbs.	July Lbs.	August Lbs.	September Lbs.	October Lbs.	November Lbs.
Washed Wool	225,484	403,518	320,272	272,864	710,293	1,016,044
Tops	121,719	224,017	268,165	227,856	206,186	261,963
Worsted Yarn	126,497	163,895	172,731	167,712	118,897	142,587
Waste	11,119	7,729	13,354	5,548	14,302	5,559
Noil	12,261	11,686	2,630	4,724	4,693	5,946
Cotton Yarn	1,626	1,093	112	1,291	59	....
Totals	498,706	811,938	777,264	679,995	1,054,430	1,432,099

It is, therefore, evident that the business in the Bradford district, just before the war, was above the average. Table 2 shows the same data for the months of July to November.

flatter ourselves on our "up-to-the-minute" methods and improved machinery, while in all probability we will be the last large textile manufacturing country to adopt and use standards for moisture regain. The above

TABLE II.

	1914.				
	July Lbs.	August Lbs.	September Lbs.	October Lbs.	November Lbs.
Tops	6,987,616	2,182,631	4,383,047	5,915,206	3,987,947
Wools	827,521	168,501	473,042	508,047	314,044
Noils	981,712	97,433	170,724	303,171	157,460
Wastes	678,690	103,645	113,620	185,814	124,935
Worsted Yarns	396,467	129,852	150,604	239,619	236,574
Cotton Yarns	10,270	994	1,489	5,449	3,064
Silk Yarns	2,920	1,874	3,806	200	443
Goods weighed only	218,362	82,699	100,913	185,588	206,478
Totals	10,103,558	2,767,629	5,397,245	7,343,094	5,030,945

The movement at Tarrassa, Spain, shown in Table 3, is interesting because of the very apparent disturbance of business. Unfortunately the reports of this house for 1913 and 1912 are not available and it is, therefore, impossible to judge whether these months are above or below the seasonal average.

Wools are the largest portion of the work of the Spanish Conditioning House, while at Bradford, tops form the largest part. The variation from month to month is of course influenced by the season as well as the war, but it is evident that the slight decrease in

table shows that the American wool and worsted manufacturers must meet competition of at least one neutral country which has not only an advantage in cost of labor, but a superior and more accurate control of the cost of raw material.

—:—

The mill consumption of cotton and linters in the United States for 1914 was the largest in the history of the country, exceeding that for 1913, the next largest, by 98,403 bales and exceeding the average for the eight years preceding 1914 by 843,250 bales.

THE SITUATION IN GERMANY

A correspondent in a recent issue of the "Zeitschrift fuer die Gesamte Textil-Industrie" reports that the trade in the textile mills of upper Alsace is slowly increasing. A number of mills are busy on army goods which are wanted for quick delivery. Firms in Berlin and Brussels that are engaged in the manufacture of army goods have large orders, particularly for delivery to the army in the East. Complaints are made of a great lack of male operatives.

DIFFICULTY IN IMPORTING COTTON FOR AUSTRIAN MILLS

A partial settlement of the question of shipping American cotton to Austria has been reached by the agreement on the part of England not to consider cotton as contraband. This enables cotton to be carried on neutral bottoms without danger of seizure by English ships. At the same time this arrangement does not remove all of the difficulties in supplying Austrian mills with cotton. In the first place cash payment is demanded for cotton and in addition to this the insurance rates are extraordinarily high. Finally there is a great scarcity of American vessels for carrying cotton. Experience will show how the new arrangement works and whether the many doubts entertained regarding it are justified. France has not yet declared her position in regard to cotton in neutral bottoms.—Zeitschrift fuer die Gesamte Textil-Industrie.

THE JUTE SUPPLY FOR AUSTRIAN MILLS

An acute scarcity of jute goods may soon be excepted as jute is obtained wholly from British India. For this reason importations of raw jute will be impossible during the war. The Austrian jute cartel has already taken steps to relieve the situation, which a prolongation of the war would make extremely critical. The cartel some time ago obtained the rights to manufacture textilose, a substitute for jute, and is now working this material in Eger, Bohemia. Textilose is, therefore, likely to be extensively substituted for jute. This substitution will have the advantage not only of supplying the scarcity of jute during the war, but also of rendering the country independent of England after the war ends.—Zeitschrift fuer die Gesamte Textil-Industrie.

ARMY GOODS FIRST

The complete subordination of the usual course of business in German mills to the needs of the army is shown by the following order issued by the commander of the 12th army corps:

> The manufacturers who have signed contracts for the delivery of army goods have been pressed by their regular customers to fill the orders given to them. As a result of this the interests of the army have suffered. Manufacturers who are working on army contracts are forbidden to work on other goods if such work interferes with the filling of the army contracts. Private orders can be filled only under such regulations as have been or may be made by the military authorities. Whoever acts contrary to this order will be punished by imprisonment. The order goes into effect immediately.

The wool and cotton waste market is also under the complete control of the Government. The regular auction sale of cotton and wool waste scheduled to take place on December 7 at Gera was indefinitely postponed. All the stock on hand had been seized by the Government.

BOYCOTTING FOREIGN WEIGHTS AND MEASURES

The "Zeitschrift fuer die gesamte Textil-Industrie" gives this report of progress in the agitation to substitute the meter for the yard in Germany:

> We learn that the efforts to displace the English yard and use the meter standard have had some effect. A manufacturer of sewing thread is placing on the market 1000-meter and 2000-meter spools of machine thread. Let us hope that the other manufacturers will follow his example.

SCARCITY OF SOAP

On Jan. 1, 1915, an order by the German Government went into effect forbidding the use of neutral oils and fats in the manufacture of soap. This has had a serious effect in the textile industry and efforts are being made to find substitutes for the rapidly diminishing stocks of textile soaps. The object of the order is to save the supply of glycerine for the military, medical and other uses. Textile manufacturers are proposing that the glycerine be extracted from grease and oil, and the residue used for soap.

A THIN-PLACE PREVENTER FOR LOOMS

An attachment for preventing thin places in the cloth during the process of weaving has recently been patented in this country, and is described by the inventor as follows: The filling binder will not permit the thread to slip nor will it gather lint. The bunter when striking the lay has a rolling motion which dislodges any lint, prevents an accumulation between the bunter and the shuttle-box. The roll of the bunter also prevents the filling forming a groove. The back wall of the shuttle-box on the lay is made concave, the concave portion corresponding with the thread engaging face of the bunter.

Fig. 1 is a partial plan showing the attachment; Fig. 2 is a side elevation partly in section; and Fig. 3 is a side elevation partly in section of the attachment for the loom. The concave recess is vertical and formed in the wall of the shuttle-box at a point where the bunter comes in contact for the purpose of clamping the filling thread against the recessed back wall of the box. The vertical concave recess is located to one side of the filling fork that is carried by the breast beam. This fork is of the usual construction, and a grate or grid is rendered unnecessary, though the same may be used if desired.

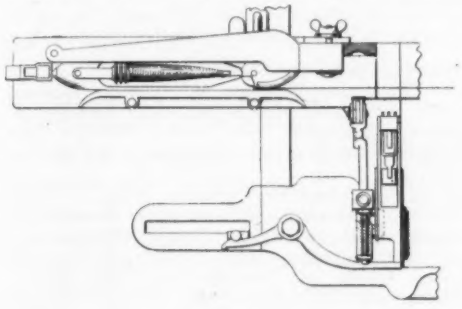

FIG. 1

The thin place preventer or filling tension device is applied to the breast beam and consists of a base having at one end an upward projecting lug provided with an aperture. At the other end nearest the lay the base has lateral extensions with apertures for the passage of bolts which engage and retain in place a guide formed to provide at its upper portion a housing for a spring. The base has a lateral extending portion that is recessed and extends below the main portion of the base so that its under surface may engage the upper surface of the breast beam to which it is secured by an adjustable bolt.

The base is maintained above the plane of the upper surface of the breast beam and the bolts that secure in place the box or guide will be in advance of the edge of the breast beam nearest to the lay. By maintaining the base so that its end which overlies the breast beam will be above the upper face of the latter, a space is provided under which the knock-off lever may operate.

FIG. 2

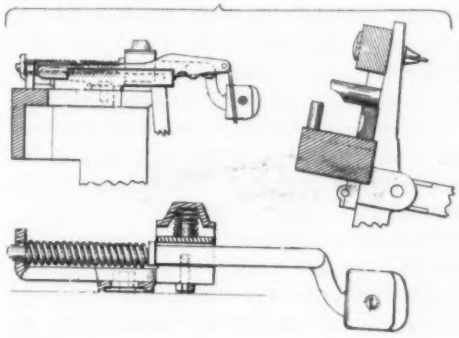

FIG. 3

The guide-bar which carries the bunter is made of a single piece, except the clamping plate for the bunter. The bar comprises a cylindrical portion, having a collar or offset to form a seat for one end of a spring that encircles the portion of the bar and bears against the collar and the lug to force the bunter toward the lay. Beyond the collar the bar is rectangular and is formed to provide an integral member which extends downward and upon which is formed a head that is countersunk for the passage of a bolt which passes through the bunter and clamps in place a removable cheek piece or plate. The bolt either engages with a nut or its threaded portion may engage with a screw threaded aperture in the cheek piece. The bunter is preferably made up of three or more pieces of leather, each having curved faces for engagement with the thread to pro-

vide a bunter that is shaped to conform with the recess in the back wall of the shuttle-box. The aperture for the passage of the bolt through the bunter may be of larger diameter than the bolt to permit forward adjustment of the bunter should each adjustment be found desirable.

THE NATIONAL ASSOCIATION OF WOOL MANUFACTURERS

The fiftieth annual meeting of the National Association of Wool Manufacturers was held at the Parker House, Boston, on February 3. President John P. Wood, who presided, reviewed the events of the past year, which had been of unusual difficulty for wool manufacturers because of the new tariff, the war, the British embargo, the shrinkage in the price of cotton and the rise in the price of wool.

On motion of Charles W. Leonard, of the Holden-Leonard Co., President Wood was authorized to appoint a committee of five to consider the attitude of the association on the next revision of the tariff.

Secretary W. L. Marvin in his report referred to the various questions affecting the industry:

NEW TARIFF

The new tariff has proved a failure—unless, indeed, its actual purpose was merely to enlarge the trade and heighten the profits of European manufacturers. Foreign goods have come into the country in quantities that have displaced the products of American woolen mills, driving into idleness a large proportion of the 200,000 wage earners of our industry.

The mills have been compelled to sell their fabrics at lower prices than prevailed before, but it is the unvarying testimony that the few cents a yard, embodying in many cases the entire profits, that were taken off the price of cloth have not beeen reflected in any appreciably lessened cost of clothing to the people of the country. Foreign manufacturers have proved to be the sole beneficiaries of this economic experiment. The net results of the Congressional elections of last November suggest a dawning appreciation of this circumstance by the citizens of the United States.

TEXTILE LABELING BILLS

Another subject that has engaged the time and attention of officers and committees of the association has been the so-called pure wool or labeling legislation in Congress. This marks the revival of a futile agitation of a dozen years ago. Every one of the bills offered on this subject was found to be ill-considered, unjust and ineffective.

One of these bills was actually reported to the Senate without notice and without any hearings having been held. The association, in common with other textile interests, remonstrated against this hasty action in the Senate, and asked that both in the Senate and in the House, where a proper hearing had been duly promised, no further steps should be taken until the grave defects of the proposed measures had been disclosed by competent witnesses.

CONDITIONING TEXTILES

A special committee on conditioning, after inspection of the plant of the United States Conditioning and Testing Co., at New York, and that of the Bureau of Standards at Wsahington, has reported its conclusion that a 15 per cent. regain is the proper basis for the buying and selling of tops, and that in the absence of public conditioning houses the establishment of a condition basis for yarns is not advisable. This report has been duly accepted by the executive committee of the association.

The election of officers resulted as follows:

President—John P. Wood, Philadelphia.

Vice-Presidents—William M. Wood, Boston; Frederic S. Clark, North Billerica; George H. Holdgson, Cleveland.

Secretary and Treasurer—Winthrop L. Marvin, Boston.

Executive Committee—Andrew Adie, Boston; Chester A. Braman, New York City; Frederic C. Dumaine, Boston; Walter Erben, Philadelphia; Frederick C. Fletcher, Boston; Julius Forstmann, Passaic; Henry A. Francis, Pittsfield, Mass.; Louis B. Goodall, Sanford, Me.; Edwin Farnham Greene, Boston; Joseph R. Grundy, Philadelphia; Franklin W. Hobbs, Boston; John Hopewell, Boston; Ferdinand Kuhn, Passaic; George E. Kunhardt, Lawrence; Charles W. Leonard, Boston; James R. MacColl, Pawtucket; William Maxwell, Rockville, Conn.; J. F. Maynard, Utica; Joseph Metcalf, Holyoke; Thomas Oakes, Bloomfield, N. J.; William H. Sweatt, Boston.

The nominating committee that proposed these names was composed of the following members: Frederic S. Clark, chairman; James R. MacColl, Charles W. Leonard, Louis B. Goodall and Henry A. Francis.

For the year ending Aug. 31, 1914, the supply of cotton in the United States amounted to 15,720,183 bales, and of linters to 772,225 bales, making a total for cotton and linters combined of 16,492,408 bales.

Of the total supply of cotton for 1914, 5,617,408 bales, or 35.7 per cent., including the quantity destroyed by fire, was consumed in this country; 8,654,958 bales, or 55.1 per cent. was exported; while 1,447,817 bales, or 9.2 per cent., remained in the country at the close of the year.

Correspondence and Notes

UPON TEXTILE TOPICS AT HOME AND ABROAD

INTERNATIONAL CLASSIFICATION OF RAW SILKS BY ITS DEFECTS

BY WARREN P. SEEM

Winner of the First Prize Awarded by the Silk Association of America

Technically speaking, no perfect skeins of raw silk reach the silk market, the highest grades representing but the highest degree of excellence. When a manufacturer buys a Grand Double Extra he expects to get a silk with the minimum number of defects and that they be of the minimum size; he is aware that the silk contains slugs, nibs, knots, waste, etc., but he does not know the number of these defects nor at what number the silk ceases to be a Grand Double Extra and becomes a Double Extra or a lower grade; nor can an expert inspector give that information because he has no means of obtaining that knowledge. In case of dispute, the manufacturer must accept the opinion of the inspector, who bases that on but a superficial examination of the silk. Inspectors claim that the defects vary between seasons due to atmospheric conditions beyond the control of the seri-culturists.

Granting that this is the true situation, it is a very strong reason why silk should be graded by the number of its defects; assuming that allowance must be made for bad seasons it should only apply to such defects as are made by the worm and not apply to those made by the reelers, excepting possibly such as are contributary to the reeling defects. Such allowances, however, would make room for irregularities of every description and soon discredit any method of grading. I propose to show that the variation in the number of defects due to those made by the worm is not as varying as is generally supposed, but that most of them are reeling defects and that by proper methods in the filatures, a definite standard can be maintained by the reelers and make possible a classification by the number of defects.

A commercially perfect skein of raw silk we will consider as one of continuous length, even in size and knotted together by short knots 1/8 inch or shorter and free from such defects as are larger than short raw knots. As short knots are no defect, but a means to a perfect thread, all reelers have recourse to the method of removing all defects by breaking them out and retieing the thread with a perfect knot, therefore whether the season be good or bad, affecting but a local or the general silk raising district, all reelers have equal chances to reel a silk with a definite number of defects and classify same according to an international standard.

When a manufacturer puts on the market a distinct brand of cloth, under a specific trade mark, he is expected to produce a uniform article year in and out; to do this he must have uniform raw stock, consider its size, elasticity, tenacity, lustre, hand or nature, winding qualities, evenness and cleanness. Instruments have been standardized for ascertaining the size, elasticity and tenacity, but for evenness and cleanness no universal standard exists, yet these two qualifications enter very prominently into the making of every cloth, and regulate the working qualities to a marked extent.

As all the qualifications of raw silk do not enter into the need of every class of thread or cloth, it is therefore unnecessary that all of them be considered in the grading but only such as have a marked effect on its true valuation on a yardage basis.

A certain cloth may not require a clean silk and as far as the finished cloth is concerned, any reasonable number of defects is allowable, nor need it be even, yet the fine ends and defects may be so numerous that the cost of throwing the silk may far exceed the difference in price of a higher grade of raw, therefore, it is apparent that the value of a silk to the manufacturer is represented by the actual cost of the prepared thread per yard as ready for the loom.

The distinct characteristics of soft and hard natured Japans, Chinas and Italians are well known and therefore no confusion can result in having a universal standard for the number of defects allowable for each grade of silk, to be applicable to Japan's, China's and Italy's raws. The advantages of such a universal classification are so apparent that I deem it unnecessary to enumerate same.

Under defects we will consider: Winding Qualities, Evenness, Cleanness.

Comparing the present method of grading raw silk as given by A. Rosenweig in Serivalor, pages 5, 6, 7, and by Leo Duran in "Raw Silk" with the proposed classification by its defects herein presented, many decided advantages will become apparent. As to the merits of the present method an inspector of no little standing said that their method was about as true as judging a basket of apples by those on top.

The class of cloth, etc., manufactured today by the American manufacturers calls for a uniform raw silk, therefore they are eagerly awaiting an international standard.

The first step towards an International Classification by its defects must be a scientific method of securing these defects. The author therefore presents herein a true method of determining the defects in Japanese, Chinese, Italian and Canton raw silks which is the result of research work and thousands of tests and experiments during twenty-six years of experience in the throwing business.

In my earliest experiments, it was discovered that the spinning qualities of raw silk were principally dependent upon the number and kind of defects in the silk; that often an Extra spun no better than a No. 1, at others times a No. 1 shows better than an Extra; these tests showed a great variation in the number of defects in silk of the same grade; second, that the winding qualities had no relation whatever to the quality of the silk but that the spinning qualities did, but as spinning was too slow a process to get a test, in a reasonable length of time, it led to a search for a shorter method to secure the same results, eventually resolving in the making of a set of ground hardened steel gauges, graduated in deniers according to the diameter of silk as found by A. Rosenweig.

The diameter of raw silk, according to Rosenweig in Serivalor, page 28, is as follows: (The gauges have been numbered according to these sizes.)

Deniers	Microns	Diameters per Inch
8	42	605
9	44	570
10	47	540
11	49	516
12	51	494
13	53	475
14	55	457
15	57	442
16	59	428
17	61	415
18	63	403
19	64	393
20	66	383
21	68	374
22	70	365
23	71	357
24	73	349
25	74	342
26	76	335
27	77	329
28	79	323
29	80	318
30	81	312

2,540 microns = 1 inch

Winding Tests

The cost of a silk may be increased 15 cents per pound by an excessive number of loose ends in the skein; these loose ends may be the result of breaking out of defects during the inspection of the skein, therefore the broken ends in winding should be considered a defect and the winding test considered in the grading. For other method of winding tests see A. Rosenweig, in Serivalor, pages 33, 34, 35, 36, 37, the Imperial Japanese Silk Conditionary House pamphlet. The author unaware of Mr. Rosenweig's tests, had determined upon 167 thread speed, a winder piecing up 140 to 160 breaks per hour. Mr. Rosenweig adopted 165 thread speed and a winder piecing up to 120 to 150 ends per hour.

A true winding test is represented by the actual number of breaks in the whole skein, top, middle and bottom. These breaks are dependent on the swift speed, size of thread, kind of swifts, whether weighted or unweighted, gums and atmospheric conditions.

The speed must be such as to get close to actual practice in the American mills or such that it makes a bobbin hard enough to give good spinning results. A single head take up spindle is used so that the tension be not too positive and allows for release when the thread gets tangled in the skein.

The author made his first tests on 60 skeins the first hour; the excessive breaks during the first half hour on some skeins shows this unreliable.

Second, on 60 skeins for two hours; this gave better results but the breaks the second hour were not low enough to give a proper average and results were not dependable.

Third, on 60 skeins until 10 per cent. of the part ran bare, or about 4 to 4 1/2 hours, adding 60 ends for the first end tied up so as to make it true on waste and cost estimates. This was used several years on a piece work system and found reliable, but on account of the time required to get a test, a series of tests was conducted, keeping record of breaks every five minutes and on the whole skeins; after calculating the same according to five different methods known to the writer, the following short method was adopted. This has been used for four years with a piece work system in winding and found reliable.

Thread speed, 167 yards per minute.

Swifts ordinary, pin hub unweighted.

Silk soaked properly and gums rubbed out when moist.

Silk air dried to about 15 to 18 per cent. moisture.

Atmospheric conditions: Humidity 70 to 75 per cent. at the same temperature.

Winding Count

The winding counts are the breaks on 300,000 yards determined as follows:

Winding Speed

The winding speed to be 167 yards per minute when the test is half finished on all classes of silk.

Thread Speed

By thread speed is meant the number of yards taken up in one minute when the bobbin is half full. As the skeins, bobbins and spindle heads vary in size, it is the only uniform speed.

To determine the thread speed approximately, from the speed of the swift, measure the skein in inches folded, multiply by 2 and then reduce to yards. This times the revolutions of the swift, gives the number of yards winding in one minute for which we have the following formula:

D = Length of skein in inches double.
2 = Rule for circumference of skein.
36 = Inches to one yard.
S = Revolutions of swift per minute.
X = Thread speed.
$(D \times 2 \times S) \div 36 = X$

Example: Let the skein measure 29 inches long double, revolution of swift be 91, then $(29 \times 2 \times 91) \div 36 = 146$ Thread speed.

To determine the friction roll speed of the machine, estimate from the thread speed of the half full bobbin.

The dimensions of Organ Winder bobbins are as follows:

	Dia.	Cir.
Bobbin head	2 1/8 in.	6.67 in.
Barrel	1 3/8 in.	4.32 in.
Average		5.50 in.
Bobbin at end of 15 minutes' starting run	1 14/32 in.	4.52 in.
Bobbin at end of winding test	1 12/16 in.	5.51 in.

The silk on a full Organ Winder bobbin weighs 0.106 lb., and the bobbin contains 31,800 yards of single thread, 14/16 denier.

The Columbia winding frames have the following cones on shaft and machines, 4 steps, 6, 5, 4 and 3 inches.

The friction wheels are 4 1/2 inches diameter.

Spindles have 1 1/4 inch head.

The friction roll speed is determined as follows from the thread speed:

T = Thread speed of half full bobbins.
36 = Inches to yard.
5.50 = Circumference of half full bobbin.
S = Spindle speed.
D = Diameter of friction roll.
Hd. = Diameter of spindle head.
R = Revolution of friction roll.

Formula: $(T \times 36) \div 5.50 = S$.
Formula: $(S \times Hd.) \div D = R$.
On the Columbia winder T = 184.
$(184 \times 36) \div 5.50 = 1{,}202$.
$(1{,}202 \times 1.25) \div 4.50 = 334$ roll.

At a thread speed of 167 yards when the test is half finished on the Columbia winder with Organ bobbin the speeds are as follows:

Friction roll 334
Spindle speed $(334 \times 4.50) \div 1.25 = 1{,}202$.

Thread speeds:—15 minutes starting run

On empty bobbin (1,202 × 4.32) ÷ 36 = 144 thread speed.
At end of starting run (1,202 × 4.52) ÷ 36 = 151 thread speed.
Average = (144 + 151) ÷ 2 = 147 thread speed.

Winding Test

Starts at (1,202 × 4.52) ÷ 36 = 151 thread speed.
Stops at (1,202 × 5.51) ÷ 36 = 184 thread speed.
Average (151 + 184) ÷ 2 = 167 thread speed.

Running Time and Yards

	Yards
Starting run 147 thread speed × 15 min. =	2,205
Winding test 167 thread speed × 90 min. =	15,039
	17,235

(In figuring actual speeds add 4 per cent. to time for slip and loss in piecing up.)

Winding Time and Yardage

Make a starting run of 15 minutes to avoid the excessive breaks. According to rule, already given, the starting run averages 147 thread speed, the winding test 167. We have:

147 thread speed × 15 m. = 2,205 yds.
167 thread speed × 90 m. = 15,030 yds.

The winding test is to be counted only on the last 90 minutes. We have 90 minutes × 15,030 × 20 bobbins = 300,600 yards. Add 4 per cent. to the time to make up for slip and loss in piecing up. We have the actual winding time then as:

Starting run .....16 minutes
Winding test .....93 minutes

Since the 300,000 yards are measured in winding it is important that the friction wheels, spindle heads and bobbins be uniform. The test must be kept running and every effort must be made by the operator not to have more than one end idle at one time. On a bad lot the operator must be given a helper. See that the spindles are well chalked and run up to speed.

(To be continued)

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The first sheep were imported into Australia from the Cape of Good Hope about 1788. They were native Cape sheep and had very fat tails, which would weigh about 10 lbs. The fat on the tail was used by the Dutch and Boer farmers as a substitute for butter.—From Sheep and Wool Industry of Australia.

GERMAN YARN NUMBERING

From Zeitschrift fuer die gesamte Textil-Industrie

Translated from the German by the Editor of the Textile World Record

The weights and measures statute of 1868 abolished the multiplicity of weights and measures that then prevailed in German commerce and provided for the introduction of the decimal system. This step was the more important because the statute introduced the decimal divisions for dry measure as well as for length and weight. The operation of the statute is limited to Germany. This brings up the question whether a similar unification of weights and measures can be accomplished in international trade as has been accomplished, or at least attempted, in Germany. The answer to this question is in the affirmative so far as the attempt at unification is concerned. For many years a special effort has been exerted to unify the numbering of yarn in manufacturing and commerce, but so far without result because of England's opposition.

Six years before the enactment of the German weights and measures statute of 1868 the question of numbering yarn had been agitated and the first step in this direction was taken by the Industrial Society of Elbeuf, France. This society recommended that all yarn be numbered to indicate the number of 1,000 meter lengths per kilogram The subject was taken up in 1866 by a number of other French associations, including the Industrial Society of Amiens. The problem has attracted special attention in Germany. In 1874 a government commission investigated and recommended the enactment of a law for the numbering and selling of yarn by the metric system. In 1897 the Association of Textile Manufacturers at Chemnitz took similar action, recommending a measure which included a number of reforms in the yarn trade. These efforts, however, proved fruitless owing to the conflicting opinions in the trade itself. The spinners of the Rhenish Westphalian district in particular refused to admit the need of a change in the method of numbering yarn. The opposition to the movement in Austria was based on international grounds, especially in the linen industry. Aside from the

belief that nothing could be accomplished in the export trade without the initiative of England which dominated the export trade in linen yarn, it was claimed that it would be extremely difficult to introduce a new system of numbering yarn in the household weaving industry of Austria. As a result the Chamber of Commerce of Reichenberg, Bohemia, took the stand that the linen industry should be excluded from the contemplated reform or that several years should be allowed in which to prepare for the change.

In 1899 the attempt to unify the numbering of yarn was resumed, this time by the German government. It was proposed then to introduce the metric system of numbering into Germany. The government's plan provided that in cases the metric system was made legally compulsory in Germany the importation of yarn made up in any other way than by the metric system was to be prohibited and all yarn intended for domestic trade was to be packed by the metric system.

This scheme encountered the opposition of the German textile associations. The consumers of yarn in the Rhenish Westphalian district pointed out that England had no intention of abandoning its universally established yard numbering system and that by forbidding the importation of yarn not made up, by the metric system, Germany would cause serious injury to the weaving industry, as it was certain that the German weaving and kniting indusries could not exist without the supply of English yarn, including cotton, wool and linen. The government's plan, it was stated, would prevent the German manufacturers from taking advantage of the world price for yarn and exclude them from access to the stocks in foreign markets. Moreover the German export industry, already burdened by a tariff, would be thus subjected to still sharper competition with France, Italy and Switzerland. Furthermore the cotton weaving industry, the weaving of mixed fabrics, the manufacture of trimmings of all kinds, the spinning of flax and, in a less degree, the linen weaving industry, would be compelled to replace a large part of their machines and appliances or to alter them at great cost. The metric scheme, it was pointed out, would prove especially burdensome on the household industry.

The discussion at that time showed that while the trade desired to accomplish the introduction of the metric system of yarn numbering because of the predominance of England in the yarn market, nevertheless, it was the belief that England for that very reason would not make any concessions in this direction. This belief, however, was not correct. In 1899 the Congress of English Chambers of Commerce adopted a resolution which stated that the British system of weights and measures, according to the Chancelor of the Exchequor, was arbitrary, complicated and irrational and in the opinion of British consuls a serious obstacle in the development of English trade, and the Chamber petitioned the government to enact a law providing for the compulsory introduction of the metric system of weights and measures at the end of two years. When a deputation presented this petition to the government the secretary of the Board of Trade replied that in his opinion and that of his associates the compulsory introduction of the metric system would cause confusion and for that reason the government could not give its approval to the measure. The ministers, however, advised the Chambers of Commerce to popularize the metric system and secure its adoption in practice. This would, he stated, be of vast benefit to the English export trade. In compliance with this decision the British Chambers of Commerce between 1902 and 1905 passed numerous resolutions declaring that the introduction of the metric system was a necessity. Thus neither the majority of the interested trades nor the government offered serious opposition to the metric numbering of yarn.

In the meantime the question of unifying the numbering of yarn on the metric basis was submitted in 1900 to the Industrial Committee in Germany. This question was also considered by a Congress for the unification of yarn numbering at Paris in the same year. The importance ascribed to this question is indicated plainly by the Paris Congress. In addition to the French members there were twenty-eight representatives of sixteen different countries. The German Board of Trade participated in the deliberations

through a committee which acted as a representative of the German government. The Paris Congress endorsed the metric system of numbering for all kinds of yarn except silk. The system which the Congress approved was based on a length of 1,000 meters, the number indicating the number of kilometers per kilogram. The metric number was to be based on conditioned weight, determined by adding to the dry weight the standard allowance for moisture which might be accepted in the respective locality.

The attitude of England toward the metric number of yarn underwent a change in 1906. The Chamber of Commerce at Manchester, which had previously been in favor of the adoption of the metric system in England in accordance with the desire of textile manufacturers of other countries, suddenly changed its attitude. Along with other influential Chambers of Commerce the Manchester Chamber came out in opposition to the metric system of yarn numbering. This change is to be ascribed to the active agitation which the British Weights and Measures Association carried on for the retention of the yard standard.

At the beginning of 1907 Japan declared herself in favor of the metric numbering of silk, a result that was brought about by the efforts of the International Committee for the Unification of Yarn Numbering. In connection with the solution of this problem much was expected from the cooperation of English and German representatives of various industries.

When we see today what hatred of Germany has been growing in England for years because Germany had developed into an uncomfortable competitor in industry and trade, it is not surprising that the attempts made in good faith on the German side to unify the numbering of yarn, met with no favorable response. In the matter of yarn numbering the knowledge that the proposition came from Germany contributed materially to increasing the opposition on the part of England, who considered herself so immeasurably superior to Germany. The hatred for Germany now being so intense, the cause is to be found in the fact that Germany has interfered with English trade, otherwise the agitation would be incomprehensible. Germany, however, having encountered this situation, there is additional reason for our taking up the question of yarn numbering and solving it without the aid of England. Germany has the more reason for adopting this course as we were the first to adopt the metric weights and measures statute and the other countries can only be thankful to us if we rid them of the domination of England in this field.

QUALITY NUMBERS FOR WORSTED TOPS

Last October a consular report on the wool industries of Leeds, Eng., contained a reference by numbers to the quality of worsted, and gave this explanation:

Bradford counts are now commercially known all over the world and locally ruled as follows: A count say 40s, means yarns spun 40 hanks to the pound avoirdupois, with each hank containing 560 yards of yarn. The 50s, 60s and other counts are ruled in the same manner. Wool which will spin to any count as its limit, carries that number as its standard quality in the wool trade, in the yarn, and in the fabric.

We called the attention of the Bureau of Foreign and Domestic Commerce to the misstatement and enclosing this explanation by our English correspondent of the Bradford system of indicating grades of wool by numbers, which appeared in our March, 1912, issue:

NUMBERS FOR TOPS

Editor Textile World Record:

Please explain the meaning of the numbers such as 44s, 46s, 50s, 58s and 60s as applied to various makes of tops? Dexter (1980).

The numbers applied to tops to designate the quality do not necessarily indicate the counts of yarn to which the tops can be spun. The following explanation of the situation regarding the numbering of tops to indicate the quality is taken from the December, 1910, issue of this magazine:

The connection is rather uncertain and remote in these days. The numbers given to tops are not necessarily an index of their spinning length. Thus there are plenty of so-called 60s tops which are neither fit nor intended to spin beyond 24s. They are "sixties" only by virtue of the fineness and quality of the fiber; not because of its length. It has to be understood that any topmaker is at liberty to christen his blends as he likes and that the spinner judges not by the name, but by the sample. Standards deteriorate in time and the denomination given to tops do not signify what they used to. The deterioration is irregular, some makers keeping a better standard than others. Nobody thinks of trying to make 48s out of marked 60s, but this length is often spun from 58s or 56s tops, the quality then being fine crossbred. If merino quality is wanted, 64s or a

highly super 60s must be used. The numbers may be misleading, but so would they be if based exclusively on length without regard to fineness. Perhaps the least objectionable way out is found by those topmakers who offer samples under their own marks and let customers call them what number they please.

"Sixties" is the most ambiguous and artificial of names, but the case is not so very different with 40s. To spin 40s yarn a 46s top is taken for medium coatings. The nominal 40s top may not spin much beyond 20s, but good 40s colonial will go to 32s safely and good 40s English to 36s. There used to be an abundance of tops described as 32s, but the former 32s now masquerade as 36s and the 36s by one of time's changes have mostly become 40s. These changes date from 12 to 15 years ago when crossbred material was excessively high in price.

"Names are nothing" say buyers emphatically and enough has been said to show that Bradford top numbers have to be interpreted with understanding. Every spinning mill has its own individualities in the character of yarn turned out and yarns from different mills of one count and nominally one quality show different characteristics. "The sample is the thing," the buyers unanimously declare, and this is so in yarn and cloth as well as in tops. Knowing the purpose in view, the topmaker of course submits the samples that are the most likely and may caution the spinner against using another of the same name. Similarly, the spinner will guard himself from claims by warning the manufacturer that such and such is not suitable for a warp-faced or a filling-faced fabric. In view of the immense diversity of cloths made from Bradford yarn a perfect standardization of tops must be a very long way off and any system of naming must have its pitfalls.

During 1907-8 an attempt to define details of the quality of Bradford tops was made by the staff of the Bradford Technical College. According to a table published in the quarterly report of that institution in April, 1909, the counts of yarn to which Bradford tops will usually spin are as follows:

Qality No. Tops.	Yarn Count Limit.
28s	16s
32s	24s
36s	28s
40s prepared	36s
40s carded	32s
44s prepared	40s
46s	40s
50s	44-46s
56s	48s
58s	50s
60s warp quality	48-50s
64s	56s
70s	80s
80s	100s
90s	150s

The table was compiled by Edford Priestley after experiments with a large number of samples with the idea of offering "a means whereby within reasonable limits" standards may be defined. In other words, the figures give a fair average which is not binding on anybody, but which is commonly attained in practice. Regent.

Our letter and "Regent's" explanation were forwarded by the Bureau to the consul at Leeds, who replied as follows:

American Consulate,
Leeds, Eng., Nov. 27, 1914.

The Secretary of State, Washington.

Sir:—I have the honor to acknowledge the receipt of the Department's instruction dated Oct. 31, 1914, transmitting a copy of a letter from the Editor of the Textile World Record, Boston, Mass., and directing that a report, in duplicate, be submitted.

Having shown the letter to Mr. J. F. Smith, who very kindly prepared the report at my request, he replied as follows: "I beg to say that no error was made in the report on Activity in the Leeds Wool Industries which appeared in the Daily Consular and Trade Reports of October 15th, page 266. The basis of fixing the quality of the wool on the number of hanks per pound (560 yards per hank) to which it will spin and weave for commercial purposes, was fixed generations ago and long before Textile Schools were started. A sentence in the Editor's letter admits and reads: 'Originally, the system may have had some such basis as this'. I beg to state that the system remains, and is the only one on which the transactions between buyers and sellers are based on the Bradford market. I know of no other on which disputes submitted to the Bradford Conditioning House are based and decided. The markets and the factories, the buyers and sellers, take no account of experiments in Schools or Colleges, and certainly not of those where the author of the experiments says: 'his figures and results are not binding on anybody'. Buying and selling have a binding basis, and I quoted no other!"

Having spoken with spinners and cloth manufacturers, I beg to report that the consensus of opinion seems to be that while Bradford sixties are supposed to spin to sixty, in the trade it is admitted that they do not always do so.

I have the honor to be, sir,

Your obedient servant,

Homer W. Byington,
American Consul.

We in turn referred the correspondent to our English correspondent, and here is his reply:

Mr. Smith's sarcasms are egregiously misapplied. As regards yarn, hanks of 560 yards are an exact measure. This is shown by a resolution of the Spinners, Manufacturers and Yarn Merchants' Section of the Bradford Chamber of Commerce on 30th October 1896:

> "That all bundle yarn shall be ruled full standard length, viz., an average of 560 yards per hank, a margin of one per cent. being allowed for shrinkage after reeling."

The standard has an ancient section, for the in-

structions of the 17th century Guild of Worsted Weavers in Norwich assert that:

> "All yarns called worsted yarns and used by the worsted weavers shall be made without fraud and shall before the same be put or offered for sale be reeled on a reel of a full yard about, every reel staff containing 14 leas and every lea 40 threads."

One could be fined for false-reeling worsted yarn, as in fact parties have been fined for the false-reeling of cotton yarn.

As regards wool and tops, the quality numbers no longer bears an exact correspondence with the limit to which the wool can be spun. It is not an exact measure, but a general description covering a point which (until tested) is as much a matter of opinion as is the yield on scouring and combing. It cannot be an exact measure, for the reason that the standard of perfection in yarn is not constant. For one purpose the same wool may be spun to a higher count than it could advisably be spun for a different purpose. Again spinnable length is not determinable with the same precision as are the weight and the length of a given sample of yarn.

The table in question, compiled by Mr. Priestley for the Bradford Technical College, cannot be refuted by a sneer. The list tabulates a number of samples of tops collected in the open market and used by the spinners whose name Mr. Smith invokes. It recites the quality numbers by which those tops are known in the market and gives the counts to which they could practically be spun. Contempt for schools and colleges is carried a little too far when it is implied that the staff of a properly equipped textile teaching institution in the chief center of the industry cannot judge the spinning length of everyday worsted tops within twelve hanks per pound! In suggesting that wool and tops are or could be bought and sold on the faith of a quality number alone the same degree of enlightenment is shown as in reference to the transactions of the Bradford Conditioning House. It is true that samples of tops are sent to that establishment to be tested for moisture and less often for fatty matters. Yarn is sent there also to be conditioned and reeled, but it is perfectly nonsensical to suggest that buyers and sellers fall out about the spinable length of wool and send to that institution for a decision. The Conditioning House is not a spinning mill and its customers deal on samples, not upon names destitute of exact meaning. Regent.

We give the correspondence, as it frequently happens that people, both inside and outside of the textile trade make the mistake of thinking that these grade numbers indicate the count of the yarn to which the wool can be spun. They are, however, arbitrary indications of quality, whereas the number of worsted yarn indicates the number of 560-yard lengths to which the yarn has been spun.

ENGLISH NOTES

By Our Regular Correspondent

It appears from British returns, so far as they are available, that British exports of textile manufactures to the United States during 1914 increased by some 39 per cent. In the articles of which $42,500,000 were sent in 1913, over $59,000,000 were sent last year. As the returns are not fully exhausted, closer accuracy is unattainable, but the figures relate to so large a proportion of the whole that they are reliable in major respects. Some additional meaning is lent to the record by the statement that as the result of war and other causes the total exports of British yarns and fabrics decreased in value by nearly 18 per cent.

Examination of the figures for the full year does not add much to the knowledge that has accumulated month by month. The cotton yarn ($3,698,000) is seen to be almost all unbleached. The cotton fabrics ($9,789,000) making most headway in shipments to America are dyed goods, which show an increase of about 8 million yards, compared with the 6 million in bleached and the less than 2 million in printed cottons.

Worsted yarn has been a prohibited article since early in November, so that the quantity represents the trading of less than a year. The official value ($1,256,000) excludes mohair yarn and the returns of the U. S. Consular district of Bradford form a fuller guide and these tell of $1,818,725 in worsted and mohair yarns. As the corresponding total for the famous year 1897 was only $421,000, the year has been an obviously big one in worsted yarn. The British tables take no separate account of worsted tops consigned to America and here again it is necessary to quote the Bradford Consular tables, showing a value of $1,313,000; or substantially the same as in 1897, despite the cutting-off of practically two months' business. Worsted fabrics, including linings and dress goods, show at $10,721,400 in the British returns and carded woolens at $6,635,600. Taking these two classes together the contract is between $4,908,900 in 1913 and $17,357,000 in 1914.

Except for unimportant decreases in spun

silk yarn and all-silk goods and a larger one in jute piece goods, there are larger values all round and the same observation applies to the statement of quantities appended in the table:

Exports U. K. to U. S.

(Twelve months)

	1913	1914
Cotton yarn ..... lbs.	5,382,200	5,804,300
Cotton piece goods .. yds.	44,415,000	59,937,700
Worsted yarn ..... lbs.	73,400	1,965,400
Woolen tissues ..... yds.	2,189,800	8,218,700
Worsted dyestuffs ... yds.	9,218,400	32,790,100
Carpets ..... sq. yds.	137,100	641,500
Spun silk yarns ..... lbs.	747,790	569,037
All-silk tissues ..... yds.	320,293	173,823
Mixed silk tissues ... yds.	743,321	1,414,487
Jute yarn ..... lbs.	396,100	1,503,300
Jute piece goods .... yds.	90,355,600	69,162,200
Linen yarn ..... lbs.	2,194,600	2,671,400
Linen piece goods .. yds.	110,771,600	115,690,000

It is doubtless all in accordance with the ancient prophecies that those who were worse off before the war should be the greatest sufferers during the war and the losers of the little they have. The cotton weaving districts, notably in and around Burnley, have been the scenes of most distress and there the position had been weakened beforehand. It is calculated that 85 per cent. of the Oldham cotton spindles are running full time so that as regards employment spinners are fairly well off and as a consequence of recruiting there is a perceptible shortage of hands. The woolen and worsted industries are working beyond normal capacity and makers of cheap goods not employed on army contracts are about as busy as those who are. Trade is not as active as fine worsted cloths, but normal business is coming back. In the jute trade want of labor is the prevailing drawback. In linen the high cost and doubtful supply of flax is the trouble. Losses are being made through the drop of values in silk and thus very little has been done towards replacing Continental by British silk fabrics. Of definite distress, inability to pay rent or buy food, only certain Lancashire weaving districts have known an abnormal quantity, and affairs are growing better rather than worse with them.

* * *

Business is exceptionally good in England for owners of worsted mules, who are not numerous although one new mule-spinning mill has been set at work during the last few months. The knit goods trade cries out for dry-spun yarn like that supplied hitherto from the Continent, but is making shift with Bradford-system yarn, spun with less oil than usual. The dress goods trade has apparently endless needs of French-spun yarn at present and the market might conceivable be of use to American producers. The coating trade can dispense with mule-spun, which is used only in limited quantity for fine cloths of raised finish. Either a French dry-spun worsted yarn, or a mixed cotton and worsted yarn closely imitating the original, is a highly salable article and numerous efforts to produce a fair substitute without the use of mule machinery are known to be in progress. A success which has been heard of, but not seen, has been effected by the co-operation of a worsted and a cotton spinner. Rovings of wool of one particular class, which alone serves the purpose, are delivered to the cotton mill and spun along with cotton rovings upon the cotton mule. Competent observers defy one to find the cotton in the undyed yarn and it is reported that orders for enormously larger weights than could be delivered have been offered to the maker. The war may have the ultimate result of promoting worsted mule-spinning in this country, but for the present the problem is to imitate mule products on such machines as exist.

* * *

In the form in which it has been put before the trade the scheme for a national dyestuff factory is briefly this:

(1) A company of $15,000,000 capital to be formed; the Government to advance $7,500,000 on 4 per cent. bonds repayable in 25 years; three-eighths of the capital to be paid in by June 30, the remainder as required in calls not exceeding one-eighth at a time at intervals at least six months apart.

(2) Consumers to bind themselves to take supplies for five years from the company, subject to receiving color of good quality at reasonble prices; disputes to be referred to an assessor.

The Government has proposed to put up $3,750,000 as soon as half that sum has been

subscribed by the trade and public, and a like sum when the second installment falls due. Thus at the half year the Government would have paid $7,500,000 and the consumers and others $5,625,000. It has been suggested less formally that consumers ought to subscribe capital equivalent to the annual value of the color consumer, which recommendation probably cannot be carried out in its entirety. The scheme has been put before the parties principally concerned in a circular with an attached blank for the recipient to fill out with the amount he would be willing to subscribe and with his assent or refusal to be bound in respect of supplies. The generosity of the financial provisions has not forbidden dye-users to object to being tied and many demand, in effect, that they shall not be called on to pay more than the prices quoted from alternative sources. The works of Read Holliday & Sons, Ltd., Huddersfield, have been acquired to form the nucleus of the Government scheme and are being enlarged by fifteen acres. There is the possibility that other factories may be added.

* * *

British cotton-growing countries are feeling the effects of war in common with the South. The curtailment of planting in Egypt is an old story. An indefinite curtailment has been recommended by the Indian Government. In West Africa the British Cotton Growing Association's price for seed cotton has had to be reduced by one-third, which measure can hardly fail to provoke curtailment there also. The 2 1/4 cents hitherto paid for unginned cotton at Lagos has been equivalent to 13 cents for lint at Liverpool, and the new rate of 1 1/2 cents, still leaves the Association with a loss upon its bargain. The yield of West African cotton is the low one of 27 per cent. The fiber is called by its friends rough, harsh and brown, but is regarded as better commercial value than the softer and wastier qualities which might be raised in its stead. Much of the crop fetches between 10 and 20 points over middling American, but the 13,000 bales of Lagos cotton does not make West Africa a vitally important source.

It may concern American users of carpet wool to know that at least Scotch blackfaced has been added to the list of wools admissible in overcoatings and blankets for the British Army. Wool of this description is practically the only one unmoved in price by the furious demand for strong wools in general and quotations for it may be expected to advance. Limited quantities of the material are taken for country tweeds and blankets, but it is in British and American carpet mills that it is chiefly consumed and a Scottish carpet manufacturer has forced it upon the notice of the War Office. The wool is sorted sometimes in the Bradford trade for the sake of the softer portions to be found in the fleece, but apparently the kemps in which the wool abounds disqualify it for general purposes. It is a wool grown upon the heather, often on land which only maintains one sheep to the acre and on which the main livestock is grouse. A rough ground underfoot is indispensable to the health of the breed. On his lower lands the farmer keeps halfbreds. As it is the fate of some of the pure blackfaced to be snowed under every winter it is well that the animal is hardy enough to maintain itself for a period even of weeks by nibbling such heather roots as lie beneath its head and the wool upon its own breast.

* * *

The Franco-Prussian War of 1870 gave British consumers large quantities of woolen rags at low prices. The present war differs in giving small supplies and high prices, although now as then there is demand enough for fabrics that can be made out of good stockings and worsteds. Germany has her own low woolen industry with an output of shoddy declared at 64.7 million pounds in 1907, but Germany has for long been the chief foreign provider of rags to the English market. Under exceptional circumstances her total sendings have been eclipsed upon occasion by those from the United States, but latterly of the 49,000 to 53,000 tons imported a steady 14,000 to 15,000 tons have been imported direct from Germany. It may be also that some of the rags from Dutch or Belgian ports have had a German

origin. At all events the supply is large enough to make its failure conspicuous and to lend increased importance to the alternative sources of suitable rags. Instead of the usual 50,000 tons the total imports into this country were 40,000 tons. Imports were 7,000 tons behind 1913 at the end of July and by the year-end the decrease was 12,600. In round numbers we received from America 4,000 tons before the war and 6,000 tons thereafter. Looking at the position at large one would say that it favors a high price for rags of all sorts and for soft material in especial. The continued dearness of wool lends support to the rag market and the tendency of fashion towards darker shades holds out better chances for the darker varieties.

* * *

The German navy is understood to have been supplied for some years past with life-saving apparatus stuffed with kapok. The same method has been taken up by the British Admiralty which has served out waistcoats wadded with the fiber to a number of ships. Under the name of "golden dawn" much of it is used for filling cushions and pseudo-eiderdown bed quilts for persons who have no idea that they are resting on an article five times more buoyant than cork. As a stuffing kapok has the merit of not felting. It is a unicellular fiber, without the twist which characterizes cotton, and the feature which qualifies it for cushions disqualifies it for yarn. Attempts to make satisfactory kapok yarn have been reported by numerous inventors as successful, but no obvious commercial success is known. Among other means mentioned have been some of treating the fiber to remove its slipperiness and afford the filaments a mutual grip upon each other. Apparently the main commercial supply comes from Java, and kapok in its uncleaned state is a dusty mass, freely intermixed with leaves and rubbish.

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The United States imported in the fiscal year 1913 of artificial silk yarn 1,942,177 pounds, valued at $2,385,350, and other artificial silk manufactures 186,086 pounds, valued at $892,434. Germany supplied of both $1,165,233 worth.

SOLIDONIA

BY ROBERT DANTZER

Translated from the French by the Editor of the Textile World Record

A large number of fibers are found which can be used as substitutes for the ordinary textile materials. These fibers, both animal and vegetable, have been studied only by a few experts and the public knows very little about them. Nevertheless many of them are of value for industrial purposes. The group of vegetable fibers is by far the most important and to this group belongs the textile material called "solidonia." Solidonia is

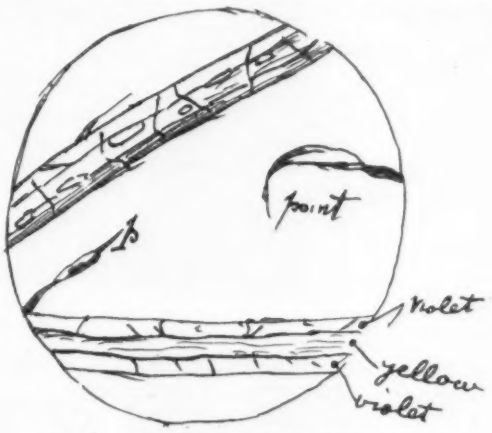


FIG. 1. A SOLIDONIA FIBER AS SEEN UNDER THE MICROSCOPE

marketed by a company called "Deutsche Faserstoff-Gesellschaft," having a mill at Fuerstenberg in Mecklemberg, Germany. According to a circular issued by the company solidonia is obtained from the bark of plants cultivated on special plantations owned by the corporation. A very fine fiber is obtained by careful selection of the plants. By reason of its screw-shaped form, solidonia is somewhat similar to natural wool. The length of the fibers varies from 2 1/2 to 4 inches in length in medium grades, while the fine fibers attain a length of 6 inches. The strength of 11s (cotton count) solidonia yarn averages 1 1/3 lbs. and that of a No. 48, about 1/2 lb.

The appearance and handle of the filaments vary with the country of origin. The luster is increased by dyeing. According to M. Valdenaire, whose laboratory is at Amentieres, the solidonia fiber examined under

the microscope have the appearance shown at Fig. 1. The filaments have branches and are striated with a very large central canal or lumen of a yellow shade. The Vetillard reagent colors the fibers a greenish red, inclined to a violet. The fibers obtained from the nettle, which are somewhat similar to solidonia, are stained blue by the same reagent. In the raw state solidonia is of a gray color, similar to flax, but is bleached very easily. It acts the same as cotton in the presence of dyestuffs and the dyeing operation is the same. Sulphur, substantives and basic colors are used. The property possessed by solidonia of absorbing perspiration without creating a sensation of cold on the skin, enables it to be mixed with wool to advantage in the manufacture of knit goods.

Solidonia is converted into yarn by either the carded woolen or worsted process and is spun by the worsted process not finer than 36s (cotton count). Up to the present time the material has been used for knit goods, passementerie, in mixtures with short wool for dress goods and cheviots and in mixtures with long wool for imitation worsted.

A HAND BOOK OF WEAVES

By G. H. OELSNER, Director of the Weaving School at Werdau.

This Series began in July, 1911

(Translated and Revised by Samuel S. Dale.)

The effect depends upon the position and order of the differently colored threads. Frequently it is possible to obtain an entirely different pattern simply by changing the position of the filling colors so that the dark pick will come in the shed previously occu-

FIG. 1688

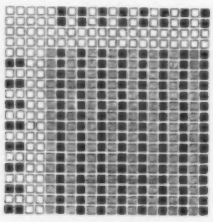
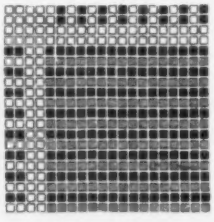


FIG. 1689



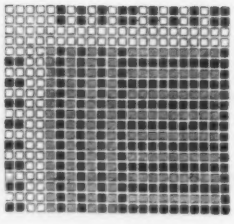


FIG. 1690

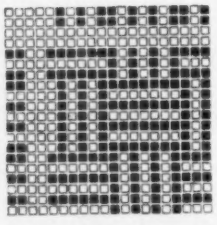


FIG. 1691

FIG. 1692

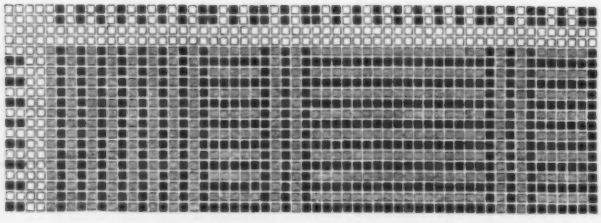


FIG. 1693

Copyright, 1915, by Samuel S. Dale

pied by the light color. This enables many different patterns to be produced by simply changing the relative position of the color to the weave pattern.

As color effects are in extensive demand and designers are constantly called upon to supply new designs and combinations, we have deemed it advisable to illustrate this branch of the art with a large number of examples, Figs. 1688 to 1873.

In many of these drafts the weave is shown at the bottom; the warp pattern, at

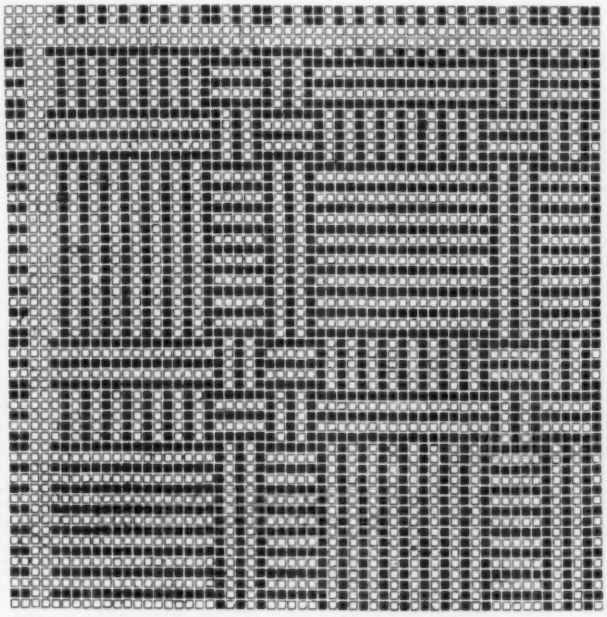


FIG. 1694

FIG. 1695

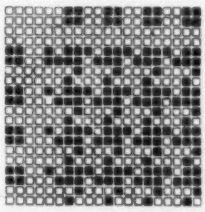


FIG. 1696

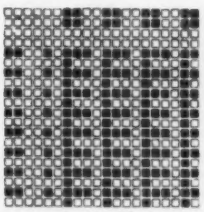
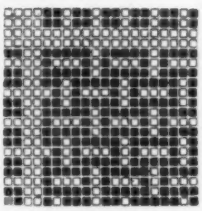


FIG. 1697



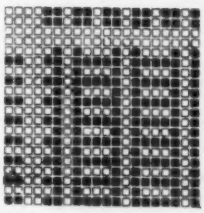


FIG. 1698

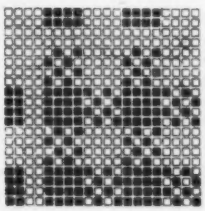


FIG. 1699

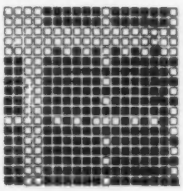


FIG. 1700

FIG 1701

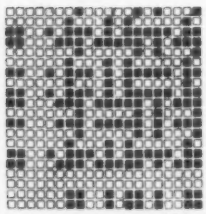
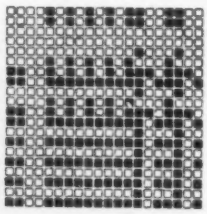


FIG. 1702



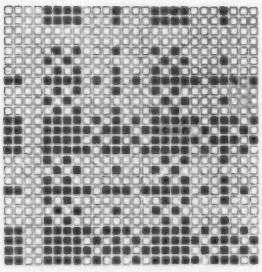


FIG. 1703

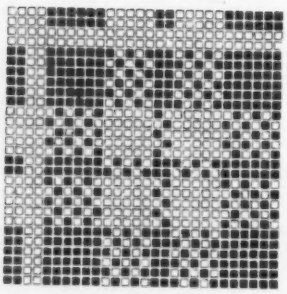


FIG. 1704

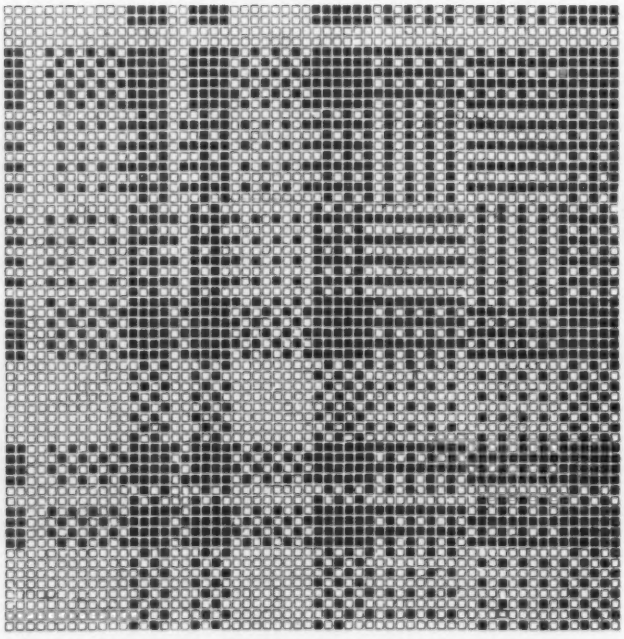


FIG. 1705

the top; the filling pattern, at the left; and the color effect in the center. Following is a list of corresponding weaves and color effects which are shown separately:

Color Effect.	Weave.
Fig. 1692	Fig. 1693
Fig. 1712	Fig. 1711
Fig. 1715	Fig. 1714
Fig. 1735	Fig. 1734
Fig. 1751	Fig. 1750
Fig. 1753	Fig. 1752
Fig. 1754	Fig. 1755
Fig. 1756	Fig. 1757
Fig. 1760	Fig. 1759
Fig. 1761	Fig. 1762
Fig. 1763	Fig. 1764
Fig. 1765	Fig. 1766
Fig. 1767	Fig. 1768
Fig. 1769	Fig. 1770
Fig. 1771	Fig. 1772
Fig. 1773	Fig. 1774
Fig. 1775	Fig. 1776
Fig. 1777	Fig. 1778
Fig. 1779	Fig. 1780
Fig. 1781	Fig. 1782
Fig. 1783	Fig. 1784
Fig. 1785	Fig. 1786
Fig. 1787	Fig. 1788
Fig. 1789	Fig. 1790
Fig. 1791	Fig. 1792

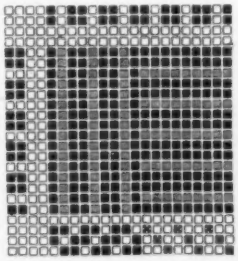


FIG. 1710

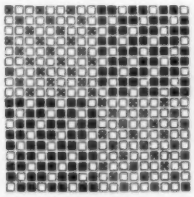


FIG. 1711

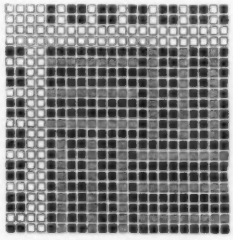


FIG. 1712

Fig. 1793	Fig. 1794
Fig. 1795	Fig. 1796
Fig. 1798	Fig. 1797
Fig. 1805	Fig. 1806
Fig. 1808	Fig. 1807
Fig. 1804	Fig. 1803
Fig. 1813	Fig. 1814
Fig. 1818	Fig. 1817
Fig. 1819	Fig. 1817
Fig. 1822	Fig. 1823
Fig. 1824	Fig. 1825

FIG. 1706

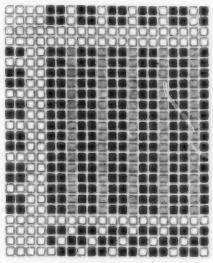
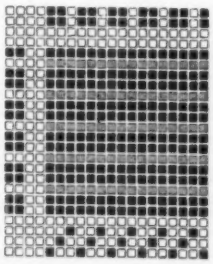


FIG. 1707



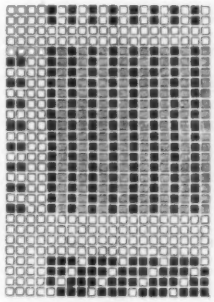


FIG. 1708

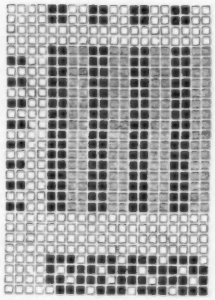


FIG. 1709

Fig. 1826	Fig. 1827
Fig. 1828	Fig. 1829
Fig. 1834	Fig. 1835
Fig. 1838	Fig. 1837
Fig. 1839	Fig. 1836
Fig. 1840	Fig. 1836
Fig. 1841	Fig. 1842
Fig. 1844	Fig. 1843

Color on the Plain Weave

The plain weave is often used for the production of colored stripes. Fine hair lines

running warpways are obtained by warping and weaving 1 light 1 dark, bring the light pick in the shed where the light warp is lowered and the dark warp is raised, Fig. 1688. The lines are made to run across the cloth filling ways by weaving the same warp pattern so that the light pick is inserted when the light warp is raised and the dark warp lowered, Fig. 1689.

In all the drafts the warp colors are indicated at the top, the filling colors at the side.

To alternate long with cross stripes, it is merely necessary to introduce two threads of one color and then continue the pattern

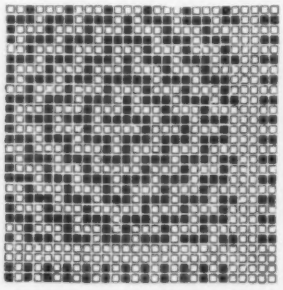


FIG. 1713

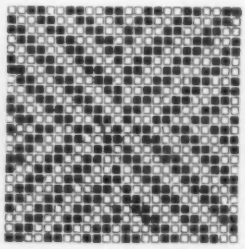


FIG. 1714

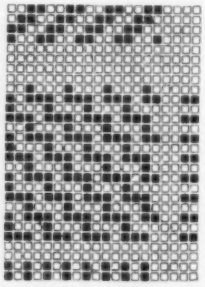


FIG. 1715

1 and 1 as far as desired, when the cross stripe can be changed to a longitudinal stripe by inserting two threads of one color. For example, the color effects shown at Figs. 1690 and 1692 are produced on a plain weave by the following arrangement of colors:

Warp Pattern for Fig. 1690	Warp Pattern for Fig. 1692
3 x (1 light, 1 dark)	7 x (1 light, 1 dark)
1 light	1 light
2 dark	2 dark
9	2 x (1 light, 1 dark, 1 light, 2 dark)
	27

By placing two threads of one color side by side it is evident that in the succeeding 1 and 1 pattern the light color will be brought on the shaft that carried the dark threads before the change, the dark color coming on the shaft that previously carried the light threads. This is illustrated by Fig. 1693, in which the two transverse rows of squares represent the two shafts of a plain weave, the black squares being one color; the white squares the other. A color is changed from one shaft to another by introducing two threads of one color and then continuing the 1 and 1 order.

The reversal of the lines lengthways as well as crossways can be effected by introducing two picks of one color and then continuing the 1 and 1 pattern. This method is illustrated at Figs. 1691 and 1694, for which the warp and filling colors are arranged as follows:

Warp and Filling Pattern for Fig. 1691	Warp and Filling Pattern for Fig. 1694
2 x (1 light, 1 dark)	7 x (1 light, 1 dark)
1 light	1 light
2 dark	2 dark
7	2 x (1 light, 1 dark, 1 light, 2 dark)
	27

Every pattern in which the lines are run in both directions, lengthways and crossways, must contain an odd number of threads, as in the examples given. Other

effects obtained with a plain weave are shown at Figs. 1695 to 1705.

Color on Twills

The 3-leaf warp twill is used for stripes in which a thread of a contrasting color follows two threads of the ground color. The filling pattern is the same, the single pick going in when the single warp thread is down, Fig. 1706. Cross stripes of this kind are made on a 3-leaf filling twill, the light colored pick being inserted when the light colored warp thread is raised, Fig. 1707.

In all 2 and 1 stripe patterns the single striping threads should come in the center of the pattern, thus 1 dark 1 light 1 dark, the weave and pattern being adjusted accordingly. At Fig. 1710 the weave is shown at the bottom. Fig. 1711 is the weave for the color effect shown at Fig. 1712.

In drafting large patterns the motif on a smaller scale is first enlarged on the draft to the full size, a certain number of threads, depending on the enlargement desired, being made to correspond to the motif.

Fine stripes or hairlines are often made on a 4-leaf twill by alternating 1 light with 1 dark thread in both warp and filling, as shown at Fig. 1708; the light pick is inserted when the light thread is down.

For a 2 and 2 stripe a broken 4-leaf twill is used, the warp dressed 2 and 2, the filling 1 and 1, Fig. 1709.

The 2 up 2 down twill is used for most of the color effects with twills. A stair effect, Fig. 1713, is produced by a 1 light 1 dark pattern in both warp and filling. Figured effects can be obtained with this stair effect by reversing the twill in either warp or filling or in both directions, as shown at Fig. 1715, the weave draft being shown at Fig. 1714.

A combination of a 2 up 2 down twill and a 3 up 1 down twill, with a 1 light 1 dark pattern in both warp and filling is shown at Fig. 1716.

THE MAKING OF SCOTCH TWEEDS

By THOMAS WELSH, Hawick, Scotland

From Journal of the Huddersfield Textile Society

(Continued from January.)

At the beginning of the trade, setting was by rule of thumb. In 1873 when I first began to take an interest in these matters, there was a setting rule in use which must have been based on observation. It was divide the grist by 3, and for plain cloth add 5, for common twill add 9. Thus 18 cuts was set for common twill—$18/3 + 9 = 15$, which means a 15 reed with 4 ends in split, equal to 32½ ends and picks.

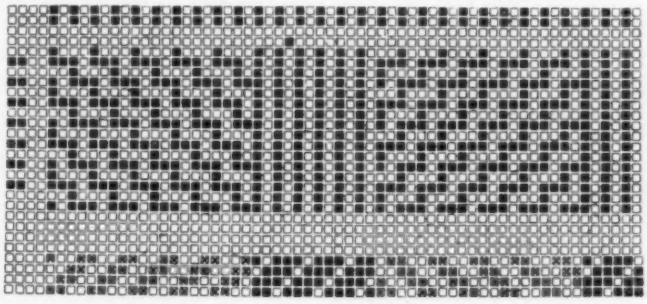


FIG. 1716

In 1875, Robert Johnstone, a Galashiels designer, published his Designer's Handbook, in which he gave the rule—Multiply the square root of the grist of the yarn by

3½ for common twill.
3⅝ for 5 leaf twill.
3¾ for 6 leaf twill, etc.

Thus 36 cut in common twill—$6 \times 3½ =$ 21 reed. There also the ends are 4 in split—21/4 equals 45½ ends and picks. These systems are of course applicable only to the Galashiels system of counts and reeds.

It may be that there are still some of Mr. Johnstone's pupils who use this method, but

the majority of designers use Ashenhurst's rule when need be, and watch the results. It is a matter of observation that setting is governed largely by the purpose for which the cloth is required. The same yarn may be set 32 ends and picks for a suiting and 24 ends and picks for a costume cloth, and the result be satisfactory in both cases. Of course, the question of weight is always involved in this matter of setting. Weight determines price. And while there is or may be an ideal setting for every yarn in every weave, and an ideal count and setting for every weight in every weave; the hard financial facts of manufacturing make it imperative that the best should be made of the stock in hand without seeking too much refinement in detail.

Ashenhurst's rules are very useful. Those for changing from one weight to another, and for finding the proper make for a new cloth, an old one being known, may be followed implicitly. But the setting rules need modification for tweeds. Instead of taking his results as correct for finished cloth, they are better for ends in reed; and instead of taking one end and one intersection as equal to 1.732 diameters, it is better to take them as equal to 2 diameters. I suppose Yorkshire makers set their woolen cloth closer than the Scotsmen do tweeds, and so Ashenhurst's rules may be more closely followed in that part of the country. It is a matter of material and milling. Tweeds are laid from 66 to 74 inches wide in loom—the majority about 68 or 69. Width determines milling and that again depends on the effect wanted. Milling is always subordinate to the appearance.

The most elaborate care is taken to get the ranges, selling samples and pieces alike. Each factory may have its own methods and all give special attention to attain the right results. This care begins with the range—the picks must be right. They are measured and noted after the range leaves the loom. After finishing, the range is measured and weighed and particulars noted. When samples are ordered, the patterns are put on an order sheet, on which are entered the range number, the width and weight, the particulars of make; and on which is noted any alteration of make that may be necessary to get the exact cloth. This sheet accompanies the samples through all the subsequent operation. The weaver has it at the loom; the millman and finisher have it before them when the samples are going through their hands.

A short length of raw cloth is kept of the pattern for comparison with the piece when it is started in loom; and a portion of it is sewn on the end of the piece before it goes to the milling. Should the piece come up off shade, this little cutting helps to locate the fault. If both piece and cutting are off, the fault must be in the milling; if the piece is off and cutting right something must be wrong with the yarn in the piece. Samples are weighed before being sent out to the customer and the result marked on the sheet. The sample is now the standard when pieces are ordered. The weight and width of samples are reported to the mill office and the weaving particulars especially as regards width may again be slightly altered. The millman and finisher are also provided with bits of the finished samples for their guidance in the treatment of the pieces.

It will be inferred from what has already been said that patterns and pieces are treated individually. Each one belongs to a class as regards price and general make; but there may be some small variation in each one which makes it needful to treat it as if it were the only one of its kind. In plain work where hundreds of pieces are made exactly alike in every particular, it is safe to give each piece exactly the same treatment. But fancy goods may belong to a class and yet the individual pieces have some slight variation that affects the milling. Hopsack and mayo twill take less time to mill than common twill is one example; the presence of twist in one and not in another is also a case in point. So the millman, while he knows generally how much to give each class, watches each individual piece in particular. Milling is done in the rotary machine with its rollers and milling box.

It is common to put special marks on the piece with the numbers to indicate how it is

to be finished, at least as regards raising. At times pieces are raised dry on either side before milling. Sometimes they are milled about half raised and the raising milled down and more often they are raised wet, after milling is complete. All these different methods of finishing can be made known to the millman by marks sewn into the ends of the pieces and mistakes prevented.

After milling comes shrinking, then cropping if it is required. Many manufacturers now blow their pieces especially if they contain worsted. They are wound on a perforated roller and steam is blown through them. This is an old practice in the worsted trade which has been adopted in tweeds in recent years. After blowing comes pressing, which is done in the usual way with cards and hot plates. Some pieces have the pressing steamed off the face and are re-pressed cold. After this they are ready for the packer and the customer.

After I had read a paper on Scotch tweed at the Textile Institute, and while the discussion was proceeding, a gentleman passed me a note asking me in my reply not to give away trade secrets. The secret of the tweed trade is an open one. I have no doubt that Yorkshire designers know as much about the operations of weaving as Scotsmen. Perhaps in some matters they know more. For Scotsmen depend very little on fancy weaves; the great bulk of their trade is done with a common twill varied with herringbone, hopsack, and other small weaves. There is no reason in nature why a Yorkshiremen may not be as good a colorist as he is a weaver. No, the secret of tweeds is not there. It really lies in the material used. No clever weaver, no talented colorist can make high-class cloth out of low-class material. I have no doubt there are Scotch designers trained in Galashiels and Hawick, in Batley and the Colne Valley. They will make the best out of the material they handle, but not even a Scotsman can make cloth that will wear well and look well out of inferior material.. The grand secret of the success of the Scotch tweeds is that they are carefully made of good pure wool. They are, as the salesman in the story said., "a' 'oo.' "

A THREAD BOARD FOR SPINNING MACHINES

The illustrations show an improved thread board for spinning frames, patented in this country, the ordinary pigtail yarn guide being dispensed with. The inventor states that the difficulty with the old style guide lies in the fact that when a broken end occurs in the spinning of this kind of roving, the end extending from the bite of the delivery roller tends to come straight down and is almost certain to fall or get caught and cause snarls that will break many more ends before the attendant can get them pieced up. With the improved thread board no broken end can get past the board to cause the trouble. Means are provided by which the

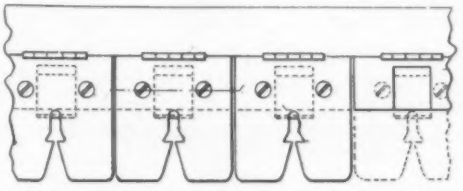


FIG. 1. A PLAN VIEW OF THE NEW THREAD BOARD

yarn is retained in the operation of piecing. The yarn end below the thread board and toward the spindle is drawn up to a position above the thread board and pieced to the portion coming from the delivery rolls.

A further improvement consists in the provision of parts or sections of the thread board to guide and retain the yarn over the center of the spindle,—the same being adjustable so as to be properly positioned, although the rail in a comparatively long spinning machine may be more out of line. These adjustable parts or sections are removable and can be readily replaced.

Fig. 1 is a plan view of the new thread board; Fig. 2 is a sectional elevation showing the position of the thread board with relation to the delivery rolls and spindles; Fig. 3 is a cross sectional view on line 3—3, Fig. 1.

Each block is made with a shallow channel within its top, and receives therein the shank portion of an L-shaped steel plate, which extends in front of the supporting bar.

Upon each block is another plate which

is clamped against the shank of the L-shaped plate.

The thickness of each of the L-shaped plates is slightly greater than the depth of the channels so that the top plate, when the bolts are tightened by the nuts, has a firm binding engagement against the portion of the L-shaped plate which is partially pocketed in the channel.

The forward depending flange is adjusted in line with the spindle, to which the thread or yarn is brought from the delivery rolls, guided through the thread board.

Each clamping plate secured above the L-shaped plates and extended considerably forwardly beyond them, is provided with a recess which extends from its forward edge beyond the location of the depending portion of the other plate.

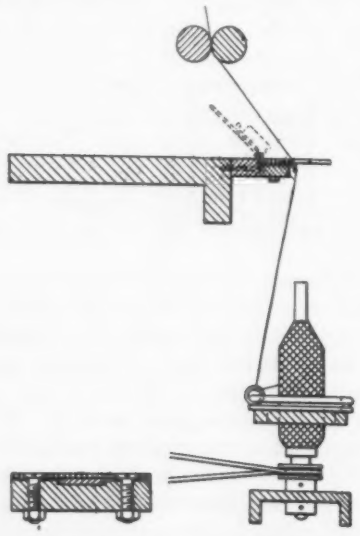


FIG. 3 FIG. 2

SECTIONAL ELAVATIONS OF THE THREAD BOARD

Each of these recesses is widened between its forward and rear ends forming a pair of shoulders as shown, and these recesses are divergent to permit of the quick and easy entrance of the yarn at the time of piecing up.

The support blocks in each of which one, or more than one, set of the L-shaped, and clamping, plates are provided by being hinged to the main support rail, may be swung back for doffing; by making and combining the parts as described, the L-shaped plates are individually adjustable so as to be brought with their flanges all in alignment even though the supporting rail may be considerably warped or out of true.

The upper plates close the spaces between the guides and form a guard or barrier below which a broken thread cannot pass.

SPINNING FINE YARN

BY WASCO

A spinner of fine cotton goods recently stated that he was having trouble in spooling, warping and slashing 100s yarn spun from Sea Island cotton, and asked for advice in handling this kind of stock. The spinner, "Dixmude," gave the following particulars regarding his work:

Weight of finished lap in picker room, 8 1/3 oz.
Card sliver, 34 gr.
Speed of doffer, 5 rev. per min.
Drawing, 58 gr.
Doublers, 230 gr.
Comber, 40 gr.
24 per cent. out on comber.
First drawing, 50 gr.
Fin. drawing, 60 gr.
Slub, 65/100 hank.
First Int. 1.60 hank.
Second Int. 3.50 hank.
8.70 hank.
20.00 hank finished roving.
Twist on spinning frame, 4.80.

If trouble is experienced in spooling, warping and slashing, it will certainly develop in the weave room. Although good fine yarn may come from the spinning frame, it can be ruined in the subsequent processes. "Dixmude" is using a light lap and a very light sliver is turned off the card. The speed of the doffer is low, although this speed is frequently used for this size of yarn. I would suggest that a heavier lap be used with a corresponding increase in the draft of the card, say a lap of about 12 ounces, delivering a sliver between 40 and 45 grains with a draft of about 125. The draft on the comber should not exceed 30 and a sliver of about 60 grains delivered. The drawings, as given by "Dixmude" should produce a good yarn if the machines are in good condition. I would suggest making the roving on the intermediate and fine frame somewhat heavier and drawing more on the jack frame. The

speed of the spindle on the spinning frame should be from 8,000 to 8,500, with the speed of the front roll from 60 to 65 revolutions per minute.

Assuming that a good yarn has been made at the spinning frame, the fault must be in the subsequent process. One of the simplest machines in the mill is the spooler and probably because of this its importance is overlooked. The tendency on this machine is always to run the spindle at too high a speed, with the result that the yarn is stretched and much of the elasticity taken from it. The aim should be to retain this elasticity throughout all processes. When once lost it can never be recovered. To obtain good results on 100s yarn the speed of the spindles should not exceed 750 revolutions per minute. It must be remembered that as the spool becomes full there is an added strain on the yarn so that if the speed of the spindle is too high at the start the yarn will certainly be stretched before the spool is filled.

The correct size of the spool should be selected so that the traverse will not be too long. In this way a certain amount of strain is taken off the yarn which would be added if the spools are too large. A good size is about 3 1/2 inches between heads.

Another point which should be carefully looked after is the setting of the thread guides. These guides should be set so that all large knots and bunches will be taken out of the yarn. The correct setting of the guides may cause more ends to break down at the spooler, but the work will be greatly improved on the warper and other processes following. It is much easier for the spooler tender to run the yarn outside the thread guides, but when this is done every bad place in the yarn goes through to the cloth. Spooler tenders should hold the end tight after tying a knot so that the yarn will be wound on the spool under tension, otherwise the end will kink and these kinks cause an endless amount of trouble on both the warper and slasher.

Excessive speed on the warper will also cause much bad work to be made as the yarn will be weakened. About 40 yards per minute can be wound on the beam with good results. A warper hand can give the slasher tender considerable trouble by allowing ends to run out after breaking and then crossing them in piecing up. Special attention should be paid to the winding of ends after being tied. Unless they are wound with the right tension, kinks will cause trouble both in slashing and weaving. The warper hand should also be very careful in tying knots so that they will not be too large and will not slip. Frequently the ends of the knots are carelessly broken off. The long ends left on the yarn cause lumps and in many cases cause the ends to break, especially in the weaving.

Usually when the warping is bad, the blame is laid to poor stock or insufficient twist in the yarn. As a matter of fact the fault very often lies in the speed of the warper and also in the tension put on the yarn caused by the spools not revolving as freely as they ought, due to worn bobbins, steps, etc. Another cause of poor warping is sometimes found in the roll being too heavily weighted, causing additional strain on the yarn.

Even when good yarn has been spooled and warped well, it can be ruined on the slasher. Only a competent man should be allowed to run a slasher. The three most important things that have to be attended to in slashing a warp are the size mixing, the steam pressure, and the speed of machines. There are other things which must be taken into consideration, such as the amount of covering on the tension or drag roll, but if the points mentioned are carefully attended to, good results are generally obtained. There is no question whatever but that the most important thing to watch is the size. This mixture should not vary. After obtaining what is considered to be a satisfactory mixing, it is advisable to stick to it. The steam pressure should not be too high or the yarn will be scorched and weakened. The amount of steam to use is determined by the speed at which the slasher machine is run and the number of ends in the warp. Everything should be done to preserve the elasticity in the yarn and to this end the size should penetrate the yarn thoroughly.

Questions and Answers

Under this head we undertake to answer, free of charge, to the best of our ability, questions pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring, not for publication, but as an evidence of good faith.

If the question is not of general interest to textile readers and involves expensive investigation, a charge covering the cost may be made, of which the inquirer will be advised before any expense is incurred.

BLEACHING ARTIFICIAL SILK

Editor Textile World Record:

What kind of a bleach is used on artificial silk so it will stay bleached? I have had trouble lately with these goods returning to their natural color. Essex (2398).

Hypochlorite of soda is the best bleach for artificial silk. In using it, however, a weak solution is much better than a strong one, but it requires somewhat more time to work its full effect, which is no disadvantage.

The most common solution of hypochlorite of soda is prepared in the following manner:

One hundred pounds of bleaching powder are dissolved in 50 gallons of water and stirred until all the lumps have been broken up. In the meantime, 60 pounds of soda ash have been dissolved in 12 1/2 gallons of water. These two solutions are now mixed and stirred well for a short time, and allowed to settle for several hours or all night. In the morning draw off the clear liquid and add water until it stands at 6° Tw. This makes a stock solution.

The artificial silk to be bleached should be first wetted out with cold water, and immersed in the bleach solution, first reduced to 2 1/2° Tw., and watched from time to time until the proper degree of whiteness is obtained. Lift, drain off, and pass through a weak solution of bisulphite of soda (1 ounce to 5 gallons of water) and then give a good final rinse.

The yellowing of bleached artificial silk, however, is not necessarily a fault of any bleaching process that might have been employed, but rather due to a too short a time during the rinse. Rinsing after bleaching is of even more importance than the choice of a bleach process. Kashgar.

MIXING ANILINE OIL AND HYDROCHLORIC ACID

Editor Textile World Record:

Please give me some information on how to mix aniline oil and hydrochloric acid to equal 100 pounds of aniline salt. Howard (2424).

A solution of aniline hydrochloride equivalent to 100 pounds of aniline salt requires 68.9 pounds of commercial muriatic acid at 18° Be. and 80.75 pounds of aniline oil. The acid is first weighed out and diluted with water, and the aniline oil is then added continuously with steady stirring, and only at the rate at which the oil appears to be taken up. Dumfies.

REMOVING BLACK LEAD FROM LACE GOODS

Editor Textile World Record:

I have been a lace bleacher for many years and have had lots of trouble with black lead. I would advise "Windsor" (2391) to get the lace from the mending room as soon as possible, for the longer the lace lays with black lead in it the more difficult it will be to get out. After boiling in the kier, run on water and if it is not possible to get a tank to heat up the water the next best thing is to turn on steam along with the water. The point is to keep the goods hot. Then run from the kier to the washing machine through a hot suds and pile. Cover the pile up to keep the steam in and let the goods lay two or three hours. Then run them through hot water to remove the suds. If there is any black lead left, try washing the goods by hand, or run them through the suds a second time. If the goods are run through chemic with the black lead left in it will be more difficult to get it out, but hypochlorite usually takes out what little black lead there is left. It is better to see that all of the

black lead has been taken out before passing through the sour. I find that I get better results by using muriatic acid instead of nitric. Hector.

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BLUE SPOTS ON KNIT GOODS

Editor Textile World Record:

I enclose sample of our knit goods which are bleached in the roll by the peroxide process and which show numerous small blue spots scattered irregularly through the goods. We are having a great deal of trouble with these spots, nearly all of our goods showing more or less of them, and would like to have your opinion as to the cause of and remedy for the difficulty. Nixon (2427).

I can think of nothing in connection with the peroxide bleaching process which would give such unfavorable results. I knew of an instance where similar trouble was encountered, and after careful investigation we found that it came from attempting to do the dyeing in close proximity to the bleaching. Apparently very small particles of dyestuff floating in the air would settle on the top of the liquid in the bleaching vats and cause spots such as appear in this sample. Separation of the processes put an end to the trouble. This might be worth while investigating. Caliatura.

The trouble which "Nixon" is experiencing is very peculiar, as the peroxide process is superior to the other processes in that there is less trouble from machinery and plant equipment. I assume from the inquiry that the trouble arises in the bleaching process, as "Nixon" does not state whether he is using a little blue after the bleach to heighten the color of the goods. If the spots are caused in the bleaching process it is evident that something comes in contact with the peroxide which acts as a soluble agent, and that the spots are then distributed through the goods. I would advise "Nixon" to examine all parts of the vats to see that the connections are right. There may be a defect in some joint where a little graphite or some other substance is being dissolved by the peroxide and carried away by the liquid into the goods. Or it may be caused by the marking of the goods. Does "Nixon" use blue crayon for marking the rolls as they are brought from the machines? I have known this to be the cause of a lot of trouble, especially if they are the soft crayons, which is distributd between the threads to a greater or less degree according to the pressure used. This color is made soluble by the bleaching solution.

I would suggest finding out where the spots first appear. We at one time had a lot of trouble with spots appearing on our goods and upon investigation found that the dust and specks were falling from the floor above, which had been used for dyeing. After putting in a new floor the specks disappeared.

If this does not remedy the trouble I would advise "Nixon" to look to his labels and the packing of the powders. Is there any other work being done in the same room where blue is being used? Is there any liquid being used to clean out the boilers that would have any effect on any of the vats or materials being used? Examine the vats to see that the lining is all right. Look at the water and steam and also the mixing of the peroxide in the bath. If a blue is used after the bleach, the trouble may arise there, for there are blues that will spot the goods, no matter how much care is taken.

Delco.

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FUZZINESS ON SILK HOSE

Editor Textile World Record:

We are enclosing two socks. One is new, while the other has been worn and washed once. Could you explain the reason for the fuzziness on these socks? Agram (2384).

The fuzziness on the silk stocking is caused by using a strong alkali in the boiling-off process before dyeing and knitting, which causes the fibers to open up too much giving a fuzzy and specky appearance which is covered up somewhat in the dyeing process. The best way to boil off silk is to use a good soap and water, or better still, the soap foam degumming process. Silk hose should be washed carefully. The best way to wash such goods is to use an olive oil in cold suds, rinsing in clean water in which a small quantity of salt or vinegar has been added. This acts as a mordant. Wring as flat as possible, let dry in the shade and then press cold. A strong alkali, such as potash or chloride of lime has been used in washing the stockings. This has turned the color and injured the fiber, causing a fuzzy appearance.

Lithonia.

THE AVERAGE YARN NUMBER

Editor Textile World Record:

We thank you for your very explicit information, supplied by mail, and published on page 97 of the January issue, regarding average yarn number of cotton cloth. This will enable our clients to avoid unnecessary litigation. Yours respectfully,

Chicago (2413).

BEST MATERIAL FOR BLEACHING TANKS

Editor Textile World Record:

What lumber is considered the best for wooden tanks in which material is treated with a weak solution of chloride of lime and after that neutralized with a weak acid solution? I am using at present cypress tanks, but I find that the bleach is eating through the edges between the bottom and staves. The tanks have been put up in the proper way, and did not show any leaks for the first four or five months. Is there any compound on the market which could be used for stopping up the leaks and is not affected by water or acid?

Arran (2361).

Probably the best wood to use in constructing tanks or vats for bleach liquor is pine. The joints should be heavily leaded with white or red lead, or with hot asphalt when first put together. The action of chlorine on linseed oil is peculiar and this oil has been used to very great advantage in treating wood for such tanks by applying it hot when the wood is quite dry. The great trouble in applying any impervious coating is that the wood is generally treated while damp or green, in which condition the coating does not adhere perfectly. A hot application of a good asphalt paint protects the wood against the action of the bleach liquor without discoloring it.

The use of thick white or red lead in the joints not only serves to make a superior joint, but if leakage occurs, the chlorine liquor converts the lead to a chloride which is normally insoluble. Lead lined tanks can be used, but the expense of constructing them of sufficient size is not balanced by the advantage over wooden tanks. For the purpose indicated, it would appear that a wooden tank, well jointed, and given a light protecting inside coat of asphalt, should meet every requirement. Very durable bleaching and dye tubs are now constructed of stoneware slabs, and also from a kind of hard soapstone that is much employed in making stationary domestic laundry tubs. This matter might be well worth investigating. Beta-Naphthol.

VARNISH FOR ROLLERS

Editor Textile World Record:

I would like to know if there is a varnish for coating rollers in a silk spinning room to prevent loose stock from sticking to them. What humidity is best for keeping loose stock free from the front pressing rollers? Essex (2405).

I do not see how varnish would help to keep the loose stock from sticking to the rollers. This is due to carelessness on the part of the operative. It is well to have as much humidity in the room as the law will allow to keep the stock free from the front pressing rollers. Lithonia.

PICKING COTTON

Editor Textile World Record:

What is the requisite number of blows per inch that cotton of various lengths should receive in the picking room on the various machines, 2 and 3 blade beaters and porcupine beater?

Metz (2382).

"Metz" asks a direct question and it looks as if only a direct answer should be given, to serve as a guide for all conditions. The writer, however, has never found it practical to do things that way. The thickness of the web of stock being delivered to beaters must be considered. In order to give a practical answer, one must assume a certain layout of the work being run. We will assume that we are running 1 1/8 inch stock through the breaker, intermediate and finisher picker. Laps for breaker, 16 oz.; finisher, 16 oz. Finisher laps should be 13 oz., four doublings on each picker, all of which have single beaters. The body of stock delivered to beater would, in this case, be $16 \times 4 = 64$ oz. per yd. This is as heavy as it should be run. If about 50 oz. per yard, it would be all right for this stock. From 50 to 65 oz. is a very good range. Blade beaters in this case should run from 35 to 40 blows per inch of stock delivered. For pin or Kershner beaters it could be increased from 10 to 20 per cent., if stock is very dirty. The main thing about picking is the air drafts. These should be so regulated that the stock would

leave the beater blade quickly and spread evenly on the cages. For longer stock we use only breaker and finisher and aim to deliver about 30 to 40 blows to the length of stock delivered, if the sheet delivered is about 50 oz. to the yard. If the sheet is lighter we deliver less blows; and if heavier, more blows. We have found the curling of stock is caused more by not having proper draft than by too much beating. There is no doubt but that excessive beating weakens the stock and causing excessive flyings in later processes. Minto.

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MAKING COTTON YARN ABSORBENT

Editor Textile World Record:

What is the cheapest way to treat cotton yarn so that when perfectly dry it will readily absorb water? Mantrix (2397).

"Mantrix" probably has in mind the treatment of cotton yarn so that it shall have properties the same as or similar to absorbent cotton. That cotton in any form shall possess water-absorbing qualities requires that it must be completely freed from all the natural fatty and waxy constituents that normally belong to it. These can only be removed by chemical treatment, the most effective of which consists in giving the cotton a kier boil for 8 to 12 hours with a solution containing 1 per cent of caustic soda under low pressure, then washing, and afterwards bleaching with a chloride of lime solution containing about 1 per cent of available chlorine, the bleaching action being permitted to proceed to the limit, but if possible just short of producing any oxy-cellulose.

After bleaching, wash well, and sour with a 1 per cent solution of muriatic acid, then wash and neutralize with a 1/4 per cent solution of caustic soda, and finally rinse well to remove any possible trace of alkali remaining in the yarn.

The use of bisulphite of soda is much used as an antichlor to prevent chlorine odors remaining in the cotton, but some manufacturers make use of a very weak soap solution which seems to answer the purpose, besides leaving the cotton in a soft condition.

Of course, other processes for treating cotton are to be made use of. When absorbent properties only are desired at the lowest cost, all other considerations being neglected, the process to adopt is as follows: For each 100 pounds of cotton yarn, boil the yarn for 2 hours in a solution containing 2 1/2 pounds of soluble oil made from castor oil, and to the bath add 1 pound of pearl ash. After the boil, drain off, and wash well in clean, soft water, and dry. Cotton so treated will be found to have practically all the properties of a bleached absorbent cotton, but of course, it will not meet all the tests, nor will it have the same fine white appearance that is characteristic of the bleached article. Berwick.

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TWISTS FOR WORSTED YARN

Editor Textile World Record:

Please give us information as to whether a standard scale governing twists of Bradford spun two-ply worsted yarn? We understand the twist in the single depends very much upon the stock, but we would like to know whether there is any standard generally accepted for two-ply.

Walcot (2410).

No general rule can be framed to meet all the circumstances of different cases. The matter is not one solely of the quality (or fineness) of the stock. Its solution depends somewhat on the length and regularity of the fibers, the atmospheric conditions, the type and speed of spinning frame, and still more upon the effect sought in the particular fabric for which the yarn is intended. For these reasons the correctness of any given number of turns per inch must remain chiefly a matter of experience. It follows that only a limited utility attaches to a rule which has been given for arriving at the approximately correct number of turns to give in spinning single. The formula is below:

Sq. Rt. of Count × 2.2 for merino warp.
Sq. Rt. of Count × 1.9 for soft merino warp.
Sq. Rt. of Count × 1.6 for filling.
Sq. Rt. of Count × 1.2 for knitting yarn.

The requisite number of turns for two-ply yarn is affected in part by the amount of twist present in the single, the roughness or smoothness of the single, the amount of strain in weaving and the effect desired in the cloth. Considerations of economy prevent spinners from putting in more twist than is needed for the purpose in view, but the conditions are elastic. In the circumstances it is difficult to say what are repre-

sentative twists. In one case an Australian warp merino is folded as follows:

2/56s	15	turns per inch
2/48s	14	turns per inch
2/36s	12	turns per inch
2/24s	10½	turns per inch

In another instance long New Zealand or South American wool is twisted as follows:

2/40s	12	turns per inch
2/30s	10	turns per inch

There is no fixed standard for twist in either single or two-ply worsted yarns. Below I give an average list of twists in both single and two-ply, compiled from tests of yarns by various spinners, both for warp and weft, which may to some extent serve as a basis from which to make calculations. The twist varies considerably even in the same

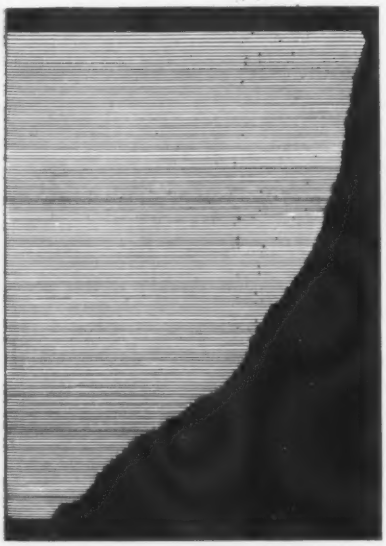

FIG. 1

quantities of yarn. It depends on the average length of the staple, the system of spinning employed, and the kind of goods to be made. As a general thing long-stapled stock requires less twist than short wools. Weft used for soft-handling goods should be spun with as little twist as possible. This not only makes a better filling weft, giving a soft handle to the piece, but also causes the stock to show up better when the goods have been dyed and finished. More twist is put into warp than into filling yarn in order to strengthen the warp.

In deciding what amount of twist any particular class of stock will require, it is advisable to dissect a sample of the stock from which the drawing is being made. As the sliver comes from the first gill box in drawing, break off a piece as long as the longest fibers in the sliver; and without trimming the ends, lay the point of tuft on a velvet-cov-

FIG. 2

ered board. Press the few projecting fibers down with finger of left hand. Hold the bulk firmly in right hand and draw the sliver across the board. The longest fibers will be left on the surface of the velvet. Repeat the operation gradually downwards until all the fibers are transferred from the right hand to the board. The shape of the collection of fibers shows the proportions of long and short fibers in the staple. Figs. 1 and 2 show tests of two lots of 50s but of different growths. The sample at Fig. 1, having such a preponderance of long fibers, will make a good spin with much less twist than that at Fig. 2.

The following may be considered a fair guide for twist in worsted yarn:

FILLING

	Yarn	Quality	Turns pr. in.
Botany	1/130s	from 90s	20
Botany	1/100s	from 90s	18½
Botany	1/90s	from 90s	18

Botany	1/80s	from 90s	13
Botany	1/60s	from 70s	12
Botany	1/40s	from 60s	9
Botany	1/20s	from 58s	6½
Crossbred	1/20s	from 40s	7½
Crossbred	1/12s	from 40s	3½
English luster	1/40s	from 40s	6
English luster	1/36s	from 44s	5½
Mohair	1/40s	from 7s	9½
Mohair	1/32s	from 6s	8
Alpaca	1/40s	from 8s	11
Alpaca	1/30s	from 4s	8

Mohair and alpaca: 9s = 56s; 7s = 50s; 6s = 44s; 5s = 40s; and 4s = 36s, approximately.

WARP

Botany warp	1/60s	from 70s	13
Botany warp	1/40s	from 60s	10
Crossbred	1/40s	from 50s	15
Mohair	1/48s	from 8s	12
Mohair	1/40s	from 7s	10½

TWO-PLY FILLING

Botany	2/50s	from 70s	13
Botany	2/40s	from 70s	10½
Crossbred	2/16s	from 46s	6½

TWO-PLY WARP

Botany	2/100s	from 90s	20
Botany	2/60s	from 70s	15½
Botany	2/56s	from 64s	15
Botany	2/48s	from 64s	14
Botany	2/36s	from 60s	13
Botany	2/24s	from 64s	10½
English luster	2/60s	from 50s super	13
English luster	2/40s	from 46s	10
Mohair	2/60s	from 9s	15
Mohair	2/40s	from 6s	11
Crossbred warp and weft	2/40s	from 46s	12
Crossbred warp and weft	2/30s	from 46s	10

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DIFFICULTY IN SPINNING

Editor Textile World Record:

Enclosed is a small swatch of roping from our spinning mules. We are having trouble with this roping winding around the rollers in the spinning. A broken end, instead of running on the floor until the spinner pieces up, runs around the roller and causes considerable trouble. We would appreciate it if you could give us some information as to the cause. The stock is cotton and is carded and spun on the woolen system.

Worden (2418).

I notice the roping is very soft and dry and that it has quite a few specks of cotton seeds in it. This would cause the ends to break off short when the rollers stop. If the rollers are cold when starting they will atract the soft, dry ends of the roping. In working this kind of stock I use five quarts of lard oil, lukewarm, to one hundred pounds of cotton and have had very good results.

Kambra.

THE DEVELOPMENT OF ARTIFICIAL INDIGO

Editor Textile World Record:

I am interested in the patents tor manufacturing synthetic indigo. I understand that all the subsequent patents depend for their value upon a basic patent. Which out of the large number of patents is this one? Westland (2393).

The whole matter is excessively technical. The development of the manufacture of artificial indigo has been traced thus by Dr. Edmund Knecht:

In 1841 Erdmann and Laurent observed that upon oxidation indigo yielded isatin. In 1848 Fritzsche obtained aniline by distilling natural indigo with potash. In 1870 A. Von Baeyer and Knop made indigotin from isatin by heating with phosphorus trichloride, acetyl chloride and phosphorus. In the same year Engler and Emmerling obtained small quantities of indigotin by heating nitroacetophonone with soda lime and zinc dust. In 1875 Von Nevchi made indigotin by oxidising indol with ozane. These were the preliminaries to Von Baeyer's success in 1880, when, after fifteen years of labor, he obtained artificial indigo from easily accessible coal tar derivatives. The most important result was its production from ortho-nitrophenylpropiolu acid, which was treated with caustic soda and a reducing agent such as grape sugar or xanthate of soda.

Heumann (1890) is credited with attaining a commercial success for the product by melting phenylglycocoll with caustic alkalies. Still greater success was achieved when he made phenlyglycocoll-ortho-carboxylic acid the starting point. "Westland" perhaps knows which of these successive steps can be regarded as the basic one.

Synthetic indigotin is produced from naphthalene, the white aromatic substance used sometimes as a disinfectant or deodorant. The naphthalone is oxidized by heating with concentrated sulphuric acid in the presence of a little mercury. There is a legend in the laboratories saying that the discovery of the use of mercury in this connection was due to the accidental breaking of a thermometer out of which the quicksilver flowed into the material under treatment. Regent.

Knitting Department

THE KNIT GOODS SITUATION

Business in the South has shown considerably more life since Christmas than at any time since the war started. While the orders that are being received here are still very small, they are more welcome than some of the larger orders from the West, as the merchandise ordered is for immediate delivery. Shipments of this kind are a great help to manufacturers who made up a lot of hosiery and underwear against advance business and were obliged either to cancel the orders or hold the goods over to next season. Some of the jobbers and retailers are letting their stocks run down to the shelves even on their most staple lines, and it will take a good many of them several months to get back to their former standing. The manufacturers are very indulgent and even when bills are past due and unpaid, every consideration is being shown delinquents and they willingly ship every reasonable amount, so as to help everyone to recuperate.

The knit goods manufacturers are very much disappointed with the amount of fall business that has been placed by the western jobber who has been in the market for two or three weeks and in most instances has returned home. The outlook in the West was never better. They are receiving high prices for most all of their products and with the bountiful crops that have been raised, they should look forward to a remarkable fall season. Still they are more conservative than one would expect. This might be explained by the fact that the poor year they have just been through makes them cautious and they think they are not yet out of the woods.

Prices for men's flat fleeces have been made, but they do not seem attractive enough to make the large buyer operate to any extent. He feels that the manufacturers can afford to make as great a reduction in fleeces as was made in the prices for men's ribbed underwear and consequently he is holding off.

One Southern manufacturer has brought out a men's twelve pound rib union suit that is being sold for $3.50. This is the first time that a men's winter rib union suit has been made that can be retailed profitably for fifty cents. If manufacturers did not open their lines so early, their customers would be in a better position to judge what their requirements for the following season would be. When prices were made there would be some life to the buying. Where there is no enthusiasm shown the chances are the prices are reduced to see if they cannot tempt the buyer. The moment this is done the operator sits tight and waits to see if there will not be further reductions. The retailer is putting off his buying until the last minute more than ever this season and this necessarily effects the jobbers' advance business.

The export business still continues to some extent. This has proved advantageous not only to the manufacturers, but to the jobbers as well, as it has kept the manufacturers from unloading a lot of hosiery and underwear on the home market at prices that would have been disastrous. The wool hosiery manufacturers have booked about all the foreign business they can take care of and at prices that they would never be able to realize in the home market. They have been obliged to stop taking any large orders, so they will be able to take care of their regular customers. If they should sacrifice their regular trade next season for an extra profit, they would have hard work to regain it. One of the largest manufacturers of wool hosiery is selling a two pound sock for home consumption at $1.02 1/2, making his usual profit, but for this same sock they are asking and getting from $1.40 to $1.50 for export. The underwear manufacturers are also getting more for export than for the home trade, but not to as great an extent as are the hosiery manufacturers.

When the export demand for cotton underwear started it was for the flat fleeces and

for many more drawers than shirts; there was very little demand for men's rib underwear. The latter are now in demand. One of the explanations is that when a man is in the trenches for a long time, the heavy fleece easily collects dirt, and if he is wounded, this fleece is carried into the wound and is very apt to cause blood-poisoning. Up to the present time there seems to be no demand whatever on the other side for men's union suits; these are almost an unknown quantity, especially in England.

At the recent meeting of the Jobbers Association of Knit Goods Buyers, the question of what weight ribs would be carried for 1915 was discussed and the general concensus of opinion was that they would all handle the eleven pound weight the same as in the past few years. Their trade has been educated to this weight for several years, as it was necessary to reduce the weight to eleven pounds. Cotton and yarn got so high and a twelve pound garment could not be made to retail at fifty cents and leave any satisfactory profit. Now if they went back to the twelve pound garment, the chances are they could offer this value only for one season and then they would have to start all over again to educate their trade to the eleven pound weight.

Some of the Southern manufacturers have already advanced the prices of their ten, eleven and twelve pound ribs ten cents a dozen. This is about the only advance in price that has been made since the opening of underwear for next fall.

The hosiery business is still very backward and manufacturers have a lot of merchandise that was all made up when cancellations began to come in, but this will right itself before very long. There does not seem to be any demand whatever for ladies' tan hose. The hosiery manufacturers of Pennsylvania sent a delegation to Washington recently, requesting that a representative of the Government be sent to their mills to investigate the conditions among the manufacturers. The administration gladly accepted this invitation and at present is making a thorough investigation of conditions. In the first mill visited it was found there were only about twenty-five people in the mill, whereas when running full the mill employs several hundred. This mill had an enormous amount of goods on hand and no orders on their books.

The backward winter affects the sweater business more than anything else in the knit goods industry. Buyers have ordered only samples. This is a hardship for the manufacturers, who feel that wool is going higher and that in the absence of orders they dare not buy their supply of raw materials. The prices on cotton sweater coats were reduced only twelve and one-half cents a dozen at the opening. Naturally, no one placed any orders. Recently a reduction was made of from twelve and one-half to twenty-five cents.

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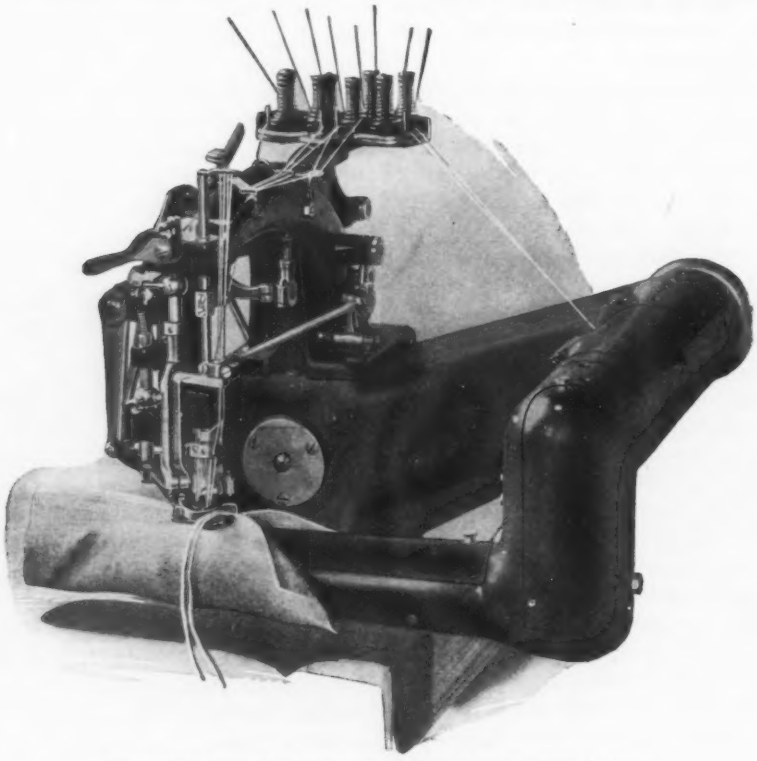
A NEW FLAT SEAMING MACHINE FOR KNITTED GOODS

Several years ago the Union Special Machine Company tested in several knitting mills in this country, a sewing machine to make a flat seam. It had a cylindrical work plate, the seaming of the two pieces of fabric together being accomplished in one operation. The work was fed from the end of the cylinder, whereas by the two operation seaming, which has been used for quite a number of years, the work was first seamed together, the first operation seam then covered and the work stripped from the cylinder machine, which completed the second or seam covering operation.

It seemed, however, to the manufacturers where the new machine was displayed, that the inventor of the novel machine was perhaps ahead of the times. They did not think the trade was ready for a garment seamed in this way, because the threads used in the seaming operation were visible upon both sides of the fabric. In the course of time this objection has melted away and several manufacturers have made their garments having the threads of the seam appearing on the outside of the garment. In this way the objection has been overcome.

The Union Special Machine Company, 300 West Kinzie St., Chicago, Ill., is

now introducing to the trade a machine to make the novel seam which they call the "Tandem Interlock" seam. The Tandem Interlock machine is of the same construction as was shown several years ago and includes the feature of joining the two edges of the fabric together in one operation and feeding the same from the cylinder work plate of the machine, thus making a perfectly flat seam with the edges securely joined and doubly covered at the meeting line. The so-called whiskers or cut loops of fabric cannot protrude through the meeting line of the seam.



THE UNION SPECIAL TANDEM INTERLOCK FLAT SEAMING MACHINE

The frame work of the machine is so arranged that the operator can do her work with the least amount of fatigue, facing the machine in the usual manner. The machine is made with the same care as to high speed and durability as characterizes all other Union Special machines. The details of operation have been very carefully worked out for the expeditious handling of the garments. The stitch forming mechanism, while novel, is of a construction that can readily be taken care of by the ordinary mechanic. It does not require the services of an expert to readjust the machine, nor does it require the use of specially prepared thread. These machines can be used like other Union Special machines with such thread as the manufacturer usually uses in his factory.

The fabric joined by the Tandem Interlock seam is only the single thickness of the material at the seam, as the two abutting edges form a perfect juncture without overlap. With the use of this seam, it is not necessary to overlap the shoulder seam, making two thickness at that point. This seam is strong enough to make a perfect shoulder seam with only a single thickness of fabric without liability of the seam rupturing. The garment seamed on this new Union Special

machine does not leave the mark of the seam upon the body of the wearer. Several knitting mills have already placed orders with the Union Special Company for these machines after having made a very careful examination of the machine and the seam made by it.

THIRTY YEARS' RETROSPECT AND PROSPECT OF HOSIERY

BY FRANK L. CHIPMAN

At the Jobbers' Association of Knit Goods, Jan. 11, 1915

I do not believe that any of us realize the wonderful values in hosiery that we are giving the consumer today, and it occurred to me that it would be interesting to sketch the changes and improvements which have been made in the manufacture of cotton hosiery in this country.

In 1884 the manufacture of hosiery was confined principally to Philadelphia, with one or two small plants in Pennsylvania, and half a dozen or so in New England. Today there are hosiery mills in almost every state east of the Mississippi. Some very large concerns of the early period have disappeared and been forgotten. Some of us will remember George Branson & Co., Vickers & Weston, Thos. W. Cope & Bros., Thos. Dolan & Co. and Lewis Jones. Since the industry began its career there have been four great and important changes.

First. The most important change was from cut (or seamed) hosiery to seamless hosiery.

Second. Dyeing of fast black and colors.

Third. Development of full fashioned hosiery.

Fourth. The manufacture of silk hosiery.

Some of us remember when there was no domestic hosiery offered except the old fashioned seamed hosiery made on circular machines, cut with shears and seamed on sewing machines.

After 1886, the Blanchard overseam sewing machine was brought out. This was a sewing machine that would make a clean seam in imitation of a hand seam and was very much appreciated by the trade. It cost 10 cents per dozen more to finish the goods on this machine. The manufacturer had no trouble whatever to get an advance of 25 cents, showing 15 cents extra profit. Previous to this, the seams were not even trimmed and the bunches in the toes were cut off with shears. About this time Willcox & Gibbs introduced their automatic trimmer, bought the Blanchard machine, took it from the market and paid the Blanchard Machine Co. a royalty. Some of you will recall that hosiery finished on this machine was stamped "W. & G. seam and welt".

Cut hosiery was made on balmorals—round heads—in long tubes, cut in lengths, with feet cut in them and sewed on sewing machines. Small sizes regularly sold at $1.65 to $2.00 per dozen from 5 to 7 1/2 inches. If you will compare an article of this kind with what we are giving the consumer today at half the price you will get some idea of the advance which has been made in the art of manufacturing hosiery.

About 1883, the Branson Machinery Co., Philadelphia, brought out what was known as a seamless knitting machine on which it was possible to fashion a heel and toe by putting the needles in and out of action in the heel and toe by hand, forming a pocket or heel. This was a very slow method and could be done only on coarse gauges. Shortly after this the Kilburn automatic machine was invented, and John Blood & Co., whom you all know, brought out their famous 160-needle stocking which was sold at $1.05 in bundles. This same hose today would sell for about 65 cents with cotton 25 per cent. higher; also 160-needle half hose at $1.50 per dozen, which today can be bought at, or about 70 cents.

Each year has brought out some great improvement in seamless knitting machines, until today the latest machines seem to accomplish everything that could be asked for. The changes in machinery have been so rapid that it has been very hard on the manufacturer; machinery has frequently become obsolete in three years. This is one of the reasons why hosiery manufacturing profits have been so small, if not less than any other industry of its magnitude and detail.

When I called on President Taft, with

some other manufacturers, during the Payne tariff controversy, one of the manufacturers remarked to the President that there had never been a hosiery manufacturer who had made a million dollars, whereupon the President replied, "Well now, isn't that a pity."

Previous to 1888, very few of the colors that were used were fast dyes, and fancy striped hosiery was generally worn. After the stocking was removed, it was not necessary to put it on the next day as the complete pattern was left on the flesh. When aniline black or the so-called fast black was discovered, the dyers charged 25 cents per pound for dyeing it, and it was no time before the old logwood dyes were entirely superceded by the aniline or fast black. Hermsford, the great German dyer, foresaw the value of this dye and spent a vast amount of money advertising it. At one time foreign goods with this dye brought a premium. In 1890 a college friend of mine who had gone into the advertising business persuaded us to put a one-inch advertisement in the Ladies' Home Journal, costing $54. We advertised crow-black hosiery, a sanitary fast black. We got so many answers and orders for sample pairs that we gave it up, it was too much trouble. It is unnecessary to tell you if we could have foreseen the possibilities of advertising hosiery at that time, what could have been done. If only I could have seen the present show "It Pays to Advertise" in 1890.

In 1900 I had an interview with Mr. Hermsdorf in Chemnitz with the idea of starting a branch plant in America, and offered him a royalty of 5 cents per dozen, guaranteeing 5,000 dozen daily. Fortunately for me the proposition was declined, for about this time all other dyers became able to dye an equally good black. Today the question whether the black is fast rarely enters into the argument in the sale of hosiery.

Next came the development of the full-fashioned industry, and lastly, three years ago, the American manufacturers started to make cheap silk hosiery. Silk hosiery had not been generally worn by the American public for two reasons: First, it was very expensive; second, most all of the goods on the market were of French manufacture, with the exception of two or three large manufacturers of fashioned hosiery in this country, and most of these goods were weighted dyes.

When the 50-cent pure dye silk hose and half hose were brought out, it did not take the public long to realize that while these goods were very thin, they were not only comfortable, but gave even better service than cotton. In my opinion it is unfortunate that the American manufacturer in either fashioned or seamless silk hosiery ever made any weighted silk goods.

About the time that the manufacturer began to master the art of making thread silk hosiery, artificial silk came on the market and some very handsome goods were brought out; artificial silk face and cotton back, also Japan silk face and artificial silk back. These goods gave good service and were a great advancement in the art of making hosiery. The manufacturers of these so-called plated goods knew that artificial silk could be worked by itself, but they also knew that without some reinforcement it possessed very little wearing quality. It was unfortunate for the hosiery business that these straight artificial goods were put on the market. They have proved that women will buy anything that looks good, as the demand for straight artificial silk ladies' goods is growing. Although they have very poor wearing qualities, they have the appearance of the real article and the economy is sidetracked by effect. This does not, however, apply to half-hose, as a man demands merit in his purchase.

There has likewise been a great advancement in the distribution of hosiery. Compare our great jobbing houses of today, with their complete plants, with those of 30 years ago, and we find many economies which help to give the consumer these wonderful values. Very few of the gentlemen here realize the completeness of the modern American jobbing house. If you had been with me on a tour of the jobbing houses of London last year, you would appreciate the advance made in this country over foreign competitors. In one of the largest houses in London, I counted thirty young men with large baskets

on their shoulders carrying goods down rough stairways to the basement to be packed. There were only two elevators in this immense establishment carrying two passengers each, and kept exclusively for customers. The buildings of all the London jobbers have antiquated, rough floors, and a combination of small rooms. I failed to find one house or institution any better or equal to ours of thirty years ago. The same applies to Paris; there are very few jobbers in France, most of the business being done direct with the retailer. I am sure that those who are there are thirty years behind any department represented here.

In Brazil I found the domestic hosiery business in about the same condition that existed here twenty years ago. I visited their mills and they were still making the old cut hosiery in some of the mills. Few of the poor people in Brazil wear hosiery. The inhabitants of the cities being Portuguese and Spanish, still wear fancy stripes, both in women's and men's hose, which would be unmarketable here.

The craze for silk hosiery has reached the South American countries and the better class of people are beginning to call for them. The duty, however, on the 50 cent silk hose in Brazil is approximately $10 a dozen. The manufacturers sell seamless cotton hose for 33 cents per pair, which would sell in this country for 12 1/2 cents. The duty, however, is something like $1.35 per dozen on 1 lb. 10 oz. cotton hose, so it entirely excludes American goods of this class.

Uruguay's population of 1,280,000, 98 per cent. white, is the most prosperous of all South American countries and affords a good market for its size, having no hosiery mills. I found in Argentine that the jobbing houses were right up to date, and their business methods on a par with ours. Large quantities of cheap German fancy hosiery are imported, and very creditable cheap staple goods are made in the country. Such socks as the Nelson and others are made in quantities and compare favorably with American manufacture. The duty, which is 97 cents per dozen on 2 lb. 4 oz., 84 needle half-hose, excludes American goods of this character. Price of 1 lb. 2 oz., 176 needle half-hose, 90 cents at the mill; the duty on this number is 50 cents per dozen. At 12 o'clock each day everyone leaves the business establishment, the doors are locked, and no one remains in the house save the watchman. All business ceases every day in the year from 12 to 2, giving everybody a rest and time to go home for their midday meal. Imagine our doing this. In Chili I found about the same conditions as in the Argentine. There are more people in Jersey City consuming hosiery than in the remainder of South America.

It is easy to go over the past, but who can predict developments for the future? I look for the practical working out of the proposed manufacturers' and merchants' exchange when offices of manufacturers of all lines will be housed in one enormous building, situated in the center of the city, a great saving of time to the buyer and great economy to the seller. This is sure to come.

Each year it seems that we have reached the limit of values which we can give our trade. I predict, however, that in the next ten years there will be great developments in the manufacture of the very cheap grades of hosiery. There has been less improvement in this class of goods than in the better grades as the machine manufacturers have devoted their energies to making improvements on fine gauge machines.

It seems reasonable to expect that both the manufacturer and the jobber should have been able to maintain their old margin of profits when these wonderful values are being given to the public. This, however, has not been the case as both the manufacturer and the jobber today are doing business on a minimum profit. So long as the jobbers are willing to pay $1.87 1/2 for a stocking to job at $2.15, I cannot see much hope of improving their profits. A year ago, a 13 inch boot silk hose was a wonderful seller at 25 cents; today I must give 17 inches, and the reduced cost of making these goods is given to the consumer.

I believe the greatest step that can be taken is closer commercial harmony between producer and distributor, the manufacturer

and jobber becoming as a big wheel, the cog of which is unity. We cannot overlook the fact of the increasing sale of hosiery direct from factory to retailer, and the more rapid growth and greater earnings on capital invested in hosiery companies. No industry is healthy without being profitable, and there are a number of factors contributing to the distribution of hosiery from manufacturer through jobber to retailer, which should be borne in mind:

First: The enormous growth of magazine and papers carrying their selling messages.

Second: The great growth of mail and mail orders on the part of catalogue houses, department stores and manufacturer to retailer.

Third: The feeling on the part of retail hosiery buyers that a mill purchase will greatly ingratiate him in the eyes of his employer, which too often is a fact, with the result of his willingness to give preference to that which he believes to be mill purchases.

Fourth: The depreciation of quality of merchandise which always exists when it is bought to sell on its appearance, rather than on intrinsic merits to the consumer.

Fifth: There are about 2,000 hosiery mills scattered in nearly every state of the Union, more are built each year. A great many of these distribute merchandise locally to accommodate their retail friends, without the competition of the standard mills.

Other factors are the growth of department stores, their mail order department and bargain basements, and the ease of reaching them in larger cities. There are 228 cities with over 25,000 inhabitants, their stores reaching a third of the population of this country. These stores use large lots of hosiery and the majority of it is bought direct from mills. Their initial orders in case lots and many duplicate orders are filled by the direct-selling mills. During the remainder of the season, these manufacturers who are selling the retail trade have ample time to extend their trips to the small towns at very little increased cost, making competition for the jobber difficult.

There is nothing the matter with this great country of ours, and it is up to us to get our own out of it. From a European standpoint, the United States is a haven of peace, security and prosperity. As compared with the awful strife abroad, we are, up to the present time, the most fortunate people in the world. It is true that we have had great anxiety recently regarding our business, but if we stop to think of the trainloads of maimed and wounded that are being hauled to the rear from the European battlefields, and the homes that are made desolate, we will have nothing but thanks to offer. Let us all appreciate the United States, realize our opportunities and not dig trenches and get into them when there is no one to fire at us. Let us not be blind to the most glorious chance which we have ever had. I believe we are going to have in the near future a wonderful revival of business, and it behooves us to get ready for it. Let us thank God that we are alive, and that we are living in a land that is at peace at a time when nearly the whole world is at war.

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A KNITTING MACHINE NEEDLE

An improved needle for knitting machines, invented and patented in this country, is described by the inventor as follows: A needle of this type is made up of two movable parts, one formed to present the usual hook and the other performing the function of the usual latch. The two parts are mounted in grooves formed in the needle cylinder or needle bed with the groove for the latch narrower than that for the hook, so that the two are kept separate.

The new needle prevents the point of the latch member from passing the back face of the hook. Special provision is made for the clearance between the forward portion of the shank of the latch member, and the opposing wall of the groove. There is nothing in certain positions of the ordinary needle to limit the transverse motion of the parts except the construction of the machine itself. The needle parts are liable to become separated transversely and upon the retracting movement of the hook the point of the latch member will pass to the rear of the hook, not only

rendering the knitting imperfect, but frequently breaking the needle.

It is important also that clearance shall be provided between the latch member and the rear wall of the groove in which it is located to take care of the fibers and dirt which might otherwise clog the groove and hinder or prevent the movement of the latch member in its groove. The present invention is designed to eliminate these difficulties.

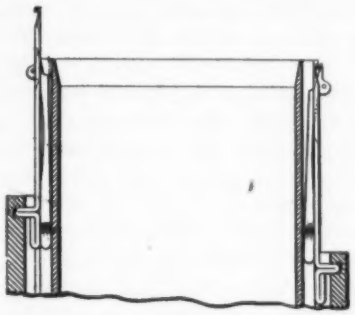

FIG. 1

Fig. 1 is a vertical cross-section of the upper portion of the needle and cam cylinders of a plain circular knitting machine

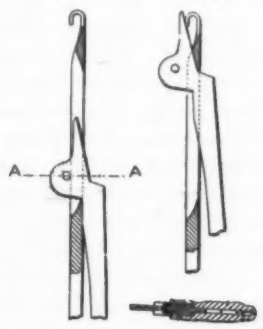

FIG. 2

FIG. 3

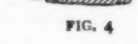

FIG. 4

showing needles of the improved form in position; Fig. 2 is a longitudinal cross-section of the upper portion of the hook and latch of the needle; Fig. 3 is similar to Fig. 2, showing the parts in different position; Fig. 4 is a view in transverse cross-section taken on the line A—A, Fig. 2.

The hook of the needle is of practically the same form as the corresponding part of the ordinary pivoted latch needle comprising the hooked end, the shank and the butt, all of which parts vary in length, shape and proportion, according to the particular style of needle. The hook is slotted transversely at 6 near its forward end, and this slot is preferably made in the form of a saw kerf entering the hook member from the front or face so that the end walls of the slot converge and present a shoulder at the rear surface of the hook. The hook is mounted to slide longitudinally in a groove formed in the exterior surface of the needle cylinder.

The latch is of a thickness that will allow it to move readily within the slot of the hook. It is mounted to slide in a longitudinal groove formed in the needle cylinder. The head of the latch is provided with upper and lower or forward and rear cam surfaces, and with upper and lower or forward and rear shoulders. The tail of the latch at its lower end is bent as indicated to secure frictional engagement with the walls of its groove.

DEFECTS IN KNIT GOODS

BY GLENCAR

Jobbers and buyers of knit goods have come to the point of examining dozens of knit garments before accepting a shipment. They pick flaws, and find fault as if they did not know why they did so. These complaints reach such things as a few dark specks on white goods, a light or heavy end that hardly shows unless held up to the light, or perhaps an oil stain that had begun to show yellow after being boxed for months. This is what causes the superintendent and knitter to say things, and gives the mill owner a few more gray hairs. The dark specks might be most anything, from cotton seeds to burrs in worsted yarn. The light and heavy ends can be traced to poor spinning or poor carding. The oil stains we will always have with us, as long as the stainless is used. This oil does not stain at once, but will turn yellow months after leaving the mill. Most of these troubles are beyond the help of the knitter. The yarn must be used, and if these slight defects arise after knitting, it is only a question of another hot letter or so to the yarn men. It certainly will not

help matters to change spinners, for these things will creep in the best regulated mills. Some time ago a traveling man asked me what I thought of certain black specks on the front of a ladies fine vest. I examined them closely, but did not have the least idea as to the cause. He told where they were made, even that did not help, for I knew the place well, knew the quality of the stock they used, knew that everything was as clean as possible around the mill, so I gave up the problem. Later I happened to be in the town, and on calling at the factory I inquired about the specks. The superintendent and I went around the mill to look things over, and we found the cause.

The building was two stories and basement, the folding was done in one corner of the basement, at the corner of two busy streets. Opposite the folding table was a double door to the fire room. There was always a draft or breeze here. As the folding tables were about level with the sidewalk, they caught almost everything in the way of dust, dirt, soot, and cinders. The folding room was put up stairs, and the difficulty was at an end. I do not take credit for this, for the "super" beat me to it when I mentioned the breezes around the window. The defects I have mentioned do not make the goods seconds in the true sense of the word. Seconds are goods so imperfect as to make them unmerchantable as perfect goods. Still there are buyers who throw out an otherwise perfect, high-class garment, because a button is chipped or discolored. If a facing stitch is crooked or run off, out it goes. The garment was not spoiled, but was as good as any other garment in the stock.

An old German once said: "Tell me why I get so many of my goods back." He pointed to a case that had come in just then. "I don't understand it. They did not come back much until the last few months." He was a good old Pennsylvania German, honest and square. I tried to help him out. It seems that most of the complaints were due to a cheap finish. The sleeves were baggy and got out of shape generally. We looked the goods over, and I found good reasons for the kicks.

The garment was about a 5-pound ladies' shape vest. The combination of yarn and cut of machine, used with the length and size to make five pounds made a slazy fabric. During the process of finishing, the goods were stretched out of all proportion. Long, tight stitches and dull seamer knives put the hoodoo sign on them. The knitting and sewing machine man was not to blame; he only obeyed orders as to long stitches. His job kept him too busy to watch the knives, to hear him tell it. It took only an hour or so to get him fixed up, and he has never forgotten it. At another time he sent for me, said his goods looked bad, and his knitter did not know what the trouble was. The knitter, in fact, was no knitter, rather a jack of all trades put in because he was handy with tools. The old German laid out some garments for inspection. There was one size that seemed worse than the others. From the looks of the fabric I could not tell what the cause of the trouble was. The stitches seemed to be uneven. Again it looked like several kinds of yarn run in together. It also looked like tight and heavy ends. I looked at the frame that made the goods. It seemed right, the stitches were nearly true, so I started up the machine, watching it closely. The dial was out of true, and I noticed the needles seemed to jump at certain spots. I trued the dial, and picked out big hook needles which had been put in for small hooks. The improvement was noticeable, but still the fabric was not right. I tried the stitch again, and while doing so noticed that one of the cylinder stitch cams held down about four needles. Then I knew instantly where the trouble was. I took out the eight cams, and found them in very bad shape. Some would hold three or four needles; others would not hold one. I ground them all alike, and spoiled them, so we sent to the shop for another set. I gave the knitter instructions for putting other cams in and grinding them. There were new stitch cams all around, as he had experimented on them all. The German wrote later that things were all right.

At another time I was up against it good and hard. A knitter had sent in a small piece of plain goods that had a few scattered

tuck stitches in it. This looked easy, but I went over to have a look at the machine. The knitter was sitting in front of the frame as I walked in. I was confident that I should walk out again in about two minutes. I pulled the cloth out and looked it over, next looked at the dial cams, then tried the take-up tension. Nothing doing, I started the frame and the tuck stitches or bird's eyes were still there. This frame was an old one made originally for shaped goods. It had made straight goods so long that parts were missing. The screws from the dial to the cam ring were loose. The cam levers were also loose.

I noticed these defects in a few minutes, but could not see where the trouble was. I began to take off the yarn guides, one at a time, feeding the yarn in by hand as I turned the frame slowly. I thought one cam might be worn enough to hold a stitch, or rather would not push out far enough to clear the latches, but they seemed all right. My two minutes grew into an hour before I located the trouble. The latches cleared all right when I turned them by hand, but there was not much to spare. When running, the play between the screws let the cams go back enough to just clear the latches, and a knot or heavy ends would ride the latch, forming a tuck stitch. When the frame was turned by hand the dirty condition of the dial slots naturally held the needles steady. I made the screws tight, fitted an iron piece in the screw holes and pounded it in so that the ring would not come out or work loose, and the cams would clear.

A certain firm had about a hundred machines fit for the scrap heap. They bought them in different parts of the country, and I was familiar with some of them. One frame in particular, a 12-inch, would break off cylinder needle butts and drop stitches on cylinder needles. These drop stitches were few and far apart, about one drop stitch to a yard. I worked on this frame for a day, but gave it up to go out of town. The man who made the frame worked on it a few days. I say the man who made it, for he was one of the firm of machine builders. He should have known the frame and all its tricks, but he could not place this one. Some days later I made another attempt to fix it. I took the frame down, looked over everything carefully, put it together again, and started knitting. Quite often a drop stitch showed up, but I sat there for hours trying to figure it out. A cylinder needle butt broke off, and the stem stuck up, and held the stitches. I counted them back to the cam that broke the butt. I took the section out and looked at it. The cams were right, but as I sat there looking at it, an unusual spot in the needle plate caught my eye. It was a flaw or a ragged hole on the edge of the plate, at the end of the space cut out to take out needles. Before I put the section back I smoothed the flaw with a file. This naturally made a larger space than usual for the opening, but it did no harm. I did many more things, such as changing the position of the yarn guides, setting dial needles in the exact center of cylinder needles, lightened the needle spring, and set the needle plates as close as possible. That frame gave no more trouble from drop stitches or broken butts. I do not know what I did to stop the trouble. I sometimes think the flaw in the casting at that exact spot would snap the needles, making them jump high enough to send the latch above the stitch on the needle, and that the latch would close, going behind the guide. If that was the case, when the needle went a trifle higher it would break off the butt on a guard cam. It is certain other things had no effect, for they had all been tried.

The returns of the number of sheep in New Zealand at the end of April of the present year show that the total is 24,595,400, a net increase of 403,590. A decrease in the North Island of 175,300 is made up in the South Island by an increase of 578,900.

The Spanish merino is the sheep that has made Australia famous, and the credit for bringing the first sheep of this type into Australia is due to Capt. Henry Waterhouse. —From Sheep and Wool Industry of Australia.

Dyeing, Bleaching, Finishing, Etc.

THE DEVELOPER SITUATION

BY BERWICK

In an interesting pamphlet of six pages, each with three columns, entitled "Verzeichmis der einem Ausfuhrverbot unterworfenen chemische und pharmazeutischen Erzeugnisse," dated October 23rd, 1914, and issued by the Kaiserlichen Statististichen Amte, American dyers and consumers of chemicals originating in Germany are confronted officially with the edict which prohibits the export of hundreds of items that contribute to our well being, the shortage of which during the present disturbance, causes considerable inconvenience to our mills, and particularly to those mills that make use of dyes for cotton requiring the aid of certain products known technically as developers and without which successful dyeing results cannot be obtained.

A careful study of this prohibited list reveals the fact that almost every item enumerated in it is derived wholly or in part, directly or indirectly from organic and certain inorganic substances that are also used in the manufacture of explosives or war munitions. There are included in the list certain items that can not be classified with the foregoing, the exportation of which is prohibited in order to protect the dyeing industry of Germany. This list includes items that are certainly not produced in that country, nor imported from any of its erstwhile colonies. They have been placed on the list to protect stocks on hand.

The American dyers at this time are interested not only in the dyes, but in the developers, the most important for every-day use being the following:

1. Beta Napthol.
2. Resorcine.
3. Phenol. (carbolic acid).
4. Meta phenylene diamine. (This is the most important one, as it is much used for producing the so-called "developed blacks".)
5. Meta tolyulene diamine.
6. Amido diphenyl amine.
7. Alpha naphthyl amine.
8. Beta naphthol mono sulphonic acid. (This is not only used as a developer, but as a raw material for making other dyes.)
9. Naphthylamine Ether.

As the export of naphthalene, the naphthols and their derivatives is prohibited, the lack of these products causes trouble. Naphthalene is important for certain specific explosives.

Resorcine is derived from benzol, and as benzol is of extreme importance for motor propulsion for military purposes, it is self-evident that but little of it finds its way into more peaceable avenues.

Phenol or carbolic acid is the important source of that most useful explosive, picric acid, and this fact alone accounts for its detention in Germany. As picric acid requires for its manufacture large quantities of nitric acid, this latter item is also prohibited. There is no doubt, notwithstanding the much vaunted processes for the fixation of nitrogen from the air, the world is yet dependent upon Chile saltpetre for its supply of nitric acid, and high explosives cannot be manufactured without the aid of this acid.

Meta phenylene diamine is produced from meta dinitro benzene and here we see how benzol and nitric acid again play their parts. This developer is at this time, the most important and eagerly sought black developer of the cotton dyer, and a number of dyehouses have been compelled to resort for the time being to antiquated methods. of dying, simply because it is not to be had.

For a similar reason, meta toluylene diamine, is difficult to obtain.

Amido diphenylene amine, being an aniline derivative requiring in its course of manufacture two nitrations for its production, removes from war purposes an amount of nitric acid otherwise needful for making explosives.

Alpha naphthylamine. This being an amido body and made from naphthalene, is likewise under the ban.

Beta naphthol mono sulphonic acid is a

most important product and is obtained from beta naphthol, the exportation of this product is prohibited, not on account of its use in making explosives but because it is an important raw material for the manufacture of dyestuffs. It is the difficulty of procuring this item at the present time by the Swiss dye factories that is giving the latter so much concern.

Naphthylamine Ether. This product is also obtained from beta naphthol and nitric acid, the U. S. patent for which expired during 1914. It is the use of nitric acid that mitigates against its exportation.

ANILINE BLACK ON COTTON HOSIERY

BY ERNEST C. T. BICK

Aniline black is not used as extensively on hosiery now as it was formerly, but it gives a good black at a low cost. Much has been written on the application of aniline black in piece dyeing and calico printing, but there is very little literature on the dyeing of aniline black on hosiery. Perhaps that is one reason why the introduction of aniline black dyeing in hosiery mills has not been more rapid. The nature of the dyeing process makes it difficult to work out a formula in the laboratory and then obtain the same results on a practical scale. When starting an aniline black dyeing plant it is best to use a formula which is known to give good results. After the plant is in operation the process may be improved if necessary by experimenting with five-pound lots and letting them go through the oxidizing chambers with a regular lot. Formerly hosiery dyers kept their aniline black formulas as personal secrets, as they were the result of persistent experiments. The production of aniline black on the fiber has been the subject of much scientific investigation since 1834 and the principles involved have been known for many years. The goods are padded in the tom-tom with a solution of aniline hydrochloride or its homologues, an oxidizing agent, such as chlorate of soda or chlorate of potash in the presence of a so-called oxygen carrier, such as blue stone, verdigris or vanadium, and a hygroscopic substance such as sal ammoniac. Then the goods are extracted and placed in revolving wire drums and are oxidized at a high temperature in an oxidizing chamber which is provided with an adjustable ventilator. When the goods are oxidized to a green color, they are removed from the drums and aged on racks, generally at night, and then singed. The oxidation is completed by an after-treatment with bichromate or bichromate and sulphuric acid. Instead of singeing, the goods are nearly always lisled. By this method a smooth finish is obtained and the cost of singeing is saved. A formula which gives excellent results when the goods are singed may give poor results when the goods are lisled. Sal ammoniac can be used when the goods are to be singed, but when it is desired to lisle the goods, it is advisable to use alum.

The theory of the lisling process is this: When the fiber containing the chemicals is dried, the fuzz on the outside becomes brittle and breaks off by being worn against the sides of the wire drums. In this way a smooth finish is obtained. To enhance the lisling process, it is good to provide the drums with one slow and one fast gear. Then the goods can be oxidized at a low speed and lisled at a high speed. The oxidizing chamber should be provided with a window from which the progress of the oxidation may be observed and through which the temperature of the room may be taken. The coils for heating the chamber with indirect steam should be so arranged as to distribute the heat evenly.

The following is a practical formula which has given good results:

Solution A. Dissolve in water, 116 lbs. aniline salt, 8 lbs. starch, and make up to 50 gallons (50 gallon barrel will do).

Solution B. Dissolve in water, 29 lbs. chlorate of soda, 15 lbs. alum, 4 1/2 lbs. blue stone, and make up to 50 gallons.

In the above formulas 120 lbs. aniline salt may be substituted with 85 1/2 lbs. aniline oil and 111 lbs. muriatic acid 32° Tw.

Eighty-seven parts chlorate of soda are equal to 100 parts chlorate of potash. The latter is not as soluble as chlorate of soda and crystallizes out of the dye liquor more easily. Bichromate of soda and bichromate

of potash have the same oxidizing power, but the soda salt is more soluble than the potash salt. After the aniline has been oxidized to a green shade the black color is developed by a further oxidation with bichromate and acid. When the goods are chromed at a low temperature, the black is again reduced to emeraldine, or in other words, it turns green on exposure to light and atmosphere. The padding solution is made up of equal parts of solutions A and B. There should be enough padding solution in the tom-tom to insure a thorough impregnation of the material. The goods are padded in the tom-tom for 30 to 45 minutes. Then they are extracted until they retain padding solutions equal approximately to 75 per cent. of their weight. The goods are placed in trucks and covered with burlap. The padding solution is brought up to its original volume with equal parts of solutions A and B and the next lot can be run through. The next morning the goods are oxidized at 120° F. with closed ventilators for 3 1/2 hours. The ventilator is opened and the temperature lowered to 105° F., at which the goods are lisled for five hours. Place the goods on racks over night to allow them to age. Chrome the next morning with 6 per cent. bichromate and 1 per cent. sulphuric acid at 170° F. Rinse and soap.

If it is desired to singe the goods, it is not necessary to use starch in solution A, and the goods should be oxidized for about 4 1/2 hours. In a small dye house, the goods may be tom-tomed, oxidized and lisled the same day, but the above formula gives a good method for a plant which is in operation every day.

The following formula can be used when the goods are to be singed:

Solution A. Dissolve in water, 120 lbs. aniline salt, and make up to 50 gallons.

Solution B. Dissolve in water, 5 1/2 lbs. blue stone, 32 lbs. chlorate of soda, 4 lbs. ammonium chloride, 4 3/4 gallons acetate of alumina 15° Tw. Make up to 50 gallons.

Padd with equal parts of solutions A and B, oxidize at 110° F., and chrome with 6 per cent. bichromate, 1 per cent. sulphuric acid, 20 minutes at 170° F.

Chroming at an elevated temperature insures a black which is to a certain extent ungreenable. An absolutely ungreenable aniline black may be obtained by using the so-called ungreenable aniline salt, which is toluidine hydrochloride, a homologue of aniline salt. Ungreenable aniline salt on hosiery should be used in the proportion of one part to three parts of aniline salt. A properly dyed aniline black will not turn green under the influence of acid. The goods will gain from 5 to 10 per cent. in weight. They will also acquire a peculiarly compact feel.

STAINING OF COTTON AND WOOL MIXED GOODS

BY ELMO

In the finishing of goods containing a mixture of wool and cotton, it is nearly always necessary to depart somewhat from the usual methods employed in handling all wool goods. The tendency of the darker colors of the cotton to run or bleed, thereby staining the lighter shades, makes it necessary to handle the goods quickly, allowing them to remain as little time as possible in the wet state, and by never letting them lie wet over night. Cutting the fulling and scouring short, so as to dry each day's work promptly, is not such a waste of time as might seem, as it gives an opportunity to fill up the fulling mills for a prompt start the following morning.

Aside from the tendency of the cotton colors to run, the character of the dyes is such as to injure the quality of the soap in the fulling and scouring processes, rendering it necessary for the finisher to make a careful study of the requirements in adjusting his soaps and regulating the procedure.

The greatest trouble comes where the goods contain both dark and light colors of cotton. It is seldom that the light colors of the wool are injured, because this stock has no affinity for the vegetable dyes that occasion the mischief.

Though the use of too strong soap or excessively hot water in scouring may cause trouble, as a rule a greater part of the difficulty begins, and often ends in the fulling.

so far as the finishing is concerned. Frequently, however, the goods come to the finisher in an unfavorable condition. The mistake is often made of laying too wide in the loom, necessitating more time in fulling than is good for the colors, and not infrequently making it impossible to get the cloth up to the required width, which is about the worst thing that can happen to a cotton mixed fabric. Among other things that may prove unfavorable, we may mention soap of too little body or wrong adjustment of alkali, insufficient boiling of the soap, using it too warm and allowing the goods to get too warm in fulling. While any one of the above conditions will cause trouble, a combination of four or five of them is especially serious, and this is just what the writer had to contend with not long ago.

The goods in question were made to finish about 24 ounces and were composed of a combination of wool, shoddy and cotton, with as little new wool as possible. They were coming with badly stained warps, which were of light mixtures and white, while the filling was mostly black. Failing to get good results in the finishing, they were being sent back to the dyer, who put them through some sort of stripping or bleaching process to restore the white. While this was an improvement, it produced a dullness to the black that was not desirable, besides being an additional expense. Having stepped in upon this condition of things, I could not at once determine what changes to make, but decided to make one change at a time and note carefully the result in each case, for I felt that there were several wrongs to be righted.

The strength of the soap had been several times increased without favorable result, and the superintendent assured me that it would have to be made more alkaline, because the goods were still coming stained. I kept my own counsel, but wondered, if he was able to tell the cause of the difficulty, why he had not corrected it before. First I examined the soap, and found that when warm it appeared all right, but when cold enough for use it had separated, the soap showing in small globules in a solution of alkali and lacking body. This confirmed my suspicion that it had not been sufficiently boiled and created another, that there might be more alkali than was necessary, which suspicion was strengthened by the fact that with all the trouble, there had been no goods come through dirty or greasy.

I found the soap tanks had been filled up soon after the soap was dissolved, and I at once had a lot made, without changing the formula, giving four hours of steady boiling. When this was cold it was tough and glassy in appearance, as it should be. This resulted in a decided improvement in the fulling, as the goods fulled quicker and showed a better felt. The staining, however, was but slightly improved.

Though I heard daily that the soap should be made stronger, I was satisfied that there was an excessive amount of alkali working to a disadvantge upon the cotton colors. I made up a new lot of soap, using 30 per cent. less of alkali, and at once got better results. Following this I increased the quantity of soap, so as to maintain the "creamy" effect in fulling, which resulted in no further need of after bleaching to restore the white. The goods were supposed to be finished 56 inches wide, but I found when they got to 58 inches they had reached the limit for shrinkage. There is scarcely anything worse that can happen to goods of this character than running in the fulling mills after they have stopped fulling. While this was a fault that could only be corrected by a change in the layout of the cloth or by better stock, I determined not to allow it to operate against the finishing, so I made it a rule to take these goods out of the mills when fulled to 58 inches. This proved a finishing touch to the correction of the trouble that had prevailed for a long time to a greater or less degree.

The shoddy that was used was made largely at the mill, and I had my doubts as to its being entirely freed from the acid resulting from carbonizing, which was an added reason for an increase of the body of the soap. The people who furnished the alkali claimed it was double the strength of soda ash. The quantity used at the start

was 4 3/4 ounces per gallon, which I reduced to 3 1/3 ounces.

The excessive strength of alkali working upon the cotton colors, the want of a thoroughly combined and proper body of soap to hold the loose color in suspension and the running of the pieces after the fulling had ceased, all combined to make it a difficult case to deal with. Even with suitable soap, the attempt to force the goods to full after they had reached the limit of shrinkage, was bound to exhaust the vitality of the soap, and result only in injury to the cloth. A most important matter in the making of such goods, is to construct them so that they will full readily to the width required.

FINISHING PIECE DYED WOOLENS

From the Dyer and Calico Printer

Much of the success in dyeing and finishing depends upon the goods coming clean to the dye bath, and the wool ought to be spun with a fairly pure and easily saponifiable oil, for only then is it possible for washing and milling to make the woven fabric sufficiently clean. When the maker dyes and finishes his own goods this can easily be seen to, but the dyer who dyes goods from other mills has to make the best of it. When the goods require carbonizing, particular care should be taken, as this operation is a fruitful source of stains, clouds and uneven dyeings. The goods must be perfectly clean, and free from all wash residues, such as traces of soap and soda, and should be hydro-extracted as soon as possible after souring, then carbonized as quickly as possible. If any portion of the cloth containing acid is exposed for even a short time to light, and especially to direct sunlight, before carbonizing, this part will dye up darker than the rest.

Another important precaution is to keep the goods from contact with any carbonized material which has been wool dyed with loose colors, as any dye which bleeds on to the piece not carbonized will be freed by the acid, causing stains to appear. Stains of this kind are of less importance on cloths which are to be filled up with acid dyes, as the boiling they get in the bisulphate very often dissolves them. Following the carbonizing, the fabric must be cleared of acid, as this, if left behind, will unite with the milling soap to form a sticky cement-like mass of stearic and oleic acids which are difficult and sometimes impossible to remove.

In milling to width, a certain allowance must be made for the goods shrinking still further during the dyeing; this will be greater in light and loose cloths, such as cheviots, serges, and meltons, than in the denser ones. Earth and ammonia should be used after the milling is over, to remove the milling soap. Earth and ammonia are more effective than any other agents. Their working so well together is due to the volatile nature of the ammonia, which forms a lather, while earth particles, which are insoluble, serve to break up the soap into smaller parts, which are more easily dissolved. A big trade has been done in these cloths up to the breaking out of the war, the use to which they are put being ready-made covert coatings for ladies in various shades of fawns, greens, golden-browns, and a small proportion of blacks. As the price of the coat complete and ready for wear is from $1.56 to $2.04, it will be obvious that only the cheapest of material can be used. The warps of these fabrics are white cotton, and the weft of low, coarse, carbonized rags of a dark brown shade, while the design of the weave is such that the cotton shows through enough to impart a mixture effect, with a bold white stripe about every half-inch.

In the state they leave the loom, these fabrics resemble very coarse dirty sacking, open in texture and stiff with oil and size, but milling with soap completely changes the handle and appearance, shrinking up the cloth until most of the warp is covered by the shoddy, leaving only the stripe in strong evidence. If for blacks, the goods are now dyed straight away with one of the many acid blacks which leave the cotton white, but if for light shades, such as greens or drabs, the goods require stripping first. A chrome strip is usually given, consisting of 8 to 10 per cent. of bichromate, and 10 per cent. of sulphuric, and the strip is complete as soon as the bath boils. Further boiling does not bring the ground down any lighter, while it quickly tenders the cloth. Following this strip comes

a thorough wash to clear away all chrome and acid, then the cloth is filled up with one or more of the acid colors to the shade required. Frequently the stripped cloth is already three parts towards the shade, and may only require toning with a few ounces of green or yellow, but if for a bright full shade of blue or green, considerably more dye will be required.

The main item of expense in this trade is the cost of the chrome strip, but nothing cheaper has been found yet that will do its work effectively and as quick. A peculiarity about the strip is, that the ground color can never be brought down below a certain shade of red-buff, no matter how long the stripping is continued, and how strong the agents are. With pulled rags, there is no telling what dyes are present, but the blending is so thorough that the ground of a stripped cloth is as level as if it had just been dyed. Large quantities of indigo or alizarine dyed rags might make a big difference in the strip, but there is little chance of that, as the rags are from all sources and get blended in the sorting by a second blend as they are fed into the rag machine, and by a third when the shoddy is stacked for spinning.

COLOR BLENDING AND SHADE MATCHING

BY JOHN BROWN

Every year marks an increase in the amount of worsted dyed in the slubbing and blended either in the recombing or in the drawing process to give the shade required. By dyeing the stock in the slubbing into solid colors, such as red, black, green and by keeping a record of the proportions of each color used to get the exact shade or tint required, it is possible at any time to repeat the shade or by changing the proportions to get a new shade. A more uniform shade can be obtained by blending before spinning than by dyeing in the piece. A deputation of the leading manufacturers from the West Riding district of Yorkshire recently waited upon the British War Office and asked them to accept khaki cloth dyed in the piece. The manufacturers acknowledged that it is very difficult to get the exact color or shade the Government requires except in cloth made from stock dyed in the slubbing, and they asked the war office to provide two standard shades, thus allowing them some latitude, promising that if goods dyed in the piece were accepted with this variation, they could supply the army with all the khaki cloth required within a reasonable time.

When the stock is dyed in the slubbing and the shade is got by blending, a few ounces is sufficient to make a test. A formula for khaki is:

200 parts of dark brown
10 parts of white

mixed in drawing or before slubbing is recombed. The ordinary process is to take

FIG. 1

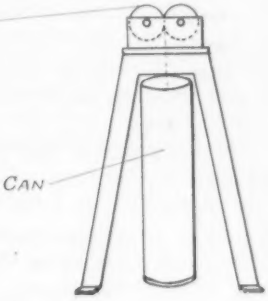

FIG. 2

the hanks of slubbing as they come from the dyer, lay them out in pans, and arrange the heavier and lighter dyed hanks to give a fair average.

A small gill box is generally used in the blending room. This serves not only for testing the solids, but also for making small samples of the blend before it is passed on to the recomber and drawer. The simplest method for unwinding the hanks into cans is to use what is known as the tin hat and a pair of high speed rollers, Fig. 1. The slivers are then put through a strong gill or breaking-up box. Then through two ordinary preparing gills, punched and combed. When square-motion combs are used, the square motion gills is put out of action, thus preventing any robbings being made. The lashing of the filling heads, together with the passing of the stock through the circle

and segments is sufficient to ensure a fairly clean top. In both cases the stock after passing through first and second finishers is weighed out in the required proportions and put through the drawing and spinning in the ordinary way. The stock appears streaky in the first few processes, but by the time it gets to the rovers an even shade is obtained. If small lots are required a large percentage of waste is made, and much time lost owing to every color having to be put through and run out separately.

If the spinner has his own combing plant, a far better way is to make his blend before combing, that is, weigh out all the colors that is required for the shade, and after passing the slubbing through the breaking-up box, mix the stock in the first preparer. The shade becomes uniform by the time it has passed through the comb and finishers. The tops can then be put through the drawing and spinning as the shade is what it will be in the yarn.

Take for example the following blends as standards:

No. 1 Gray.

200 parts white
100 parts black

No. 2 Gray.

50 parts white
60 parts black

If the blending has been done before combing and a shade between the two is required equal parts of 1 and 2 are mixed in the first drawing box to make a different shade. Another variation in the shade is obtained by using blue black in place of jet black.

When large proportions of white are used, there is a slight loss by the noil being taken from the white top. When the blending is not done until the stock reaches the drawing, no noil is taken from the white. As the noil taken out seldom reaches 5 per cent. and the lots are larger than when the solids are combed separately, both time and waste are saved, which more than counterbalance the small loss in noil made. An attractive shade is obtained by the following blend:

200 parts black
20 parts peacock blue

In dealing with brown shades special care must be taken in selecting the hanks as there is greater liability of unevenness. Some fine effects can be obtained by judicious blending.

HIGH EXPLOSIVES VS. DYESTUFFS

BY DUMFRIES

While dyers are wondering what the outcome of the war will be so far as relates to their customary supplies, some of which are completely cut off while others are coming in in restricted amounts, few realize that a number of products under ordinary circumstances are used in the production of both dyestuffs and explosives. It has gradually dawned upon many dyestuff consumers that some of their former supplies are curtailed because the raw materials of which they are made constitute the starting point for a variety of products that are used in the manufacture of explosives.

The most important raw material for the manufacture of both explosives and certain middle products for dyes is nitric acid. This is obtained in immense quantities from Chili saltpetre or "nitre," and is chemically nitrate of soda. There are other ways for obtaining nitric acid, but the one based on the use of this product is the most important. Besides being necessary for manufacturing the various nitrated cottons used as varnishes, etc., it is necessary for making the kind of gun cotton used in preparing smokeless powder, as well as for charging torpedoes and mines. Nitric acid is a necessary agent in making the several nitro-toluene and nitro-naphthalene compounds that are also useful in certain explosives, while toluene and naphthalene themselves are equally necessary for producing many dyestuffs. If, however, the nitrated raw materials are not to be had on account of withholding the nitric acid, no finished dyes of those groups can be produced.

Let us study for a moment the processes for producing that most important developer for diazotized blacks, viz: para-phenylene-diamine, and which, for convenience, is sold to dyers under a variety of shorter, though fanciful names. This product is a true derivative of aniline, and is first obtained from coal tar benzol by nitrating the latter with a mixture of nitric and sulphuric acids, yielding what is known as "nitrobenzine." This

is purified by distilling, and is then "reduced" with iron filings and muriatic acid, when aniline oil is obtained.

The aniline oil is now changed into acetanilide, a most useful medicinal agent, by boiling with glacial acetic acid for many hours in a special apparatus. The acetanilide thus obtained is further changed into paranitraniline by nitrating with nitric acid and sulphuric acid, by means of an involved but not complicated reaction. The yield of paranitraniline is subjected to a chemical reduction by means of iron filings and muriatic acid when the final product is para-phenylene-diamine, after being crystallized from water. This is the common black developed for many direct blacks on cotton. This shows how the scarcity of nitric acid, a prime necessity in modern warfare, affects the dyeing of cotton blacks.

Aniline, also, is influenced by the embargo on nitric acid, which is an absolute necessity for producing nitrobenzine, and from which aniline is a direct descendent. Benzidine and tolidine are two most necessary raw products for the manufacture of a very extensive line of direct cotton colors, and which are absolutely dependent upon the availability of nitric acid for their production.

The scarcity of certain other dyes, for example, eosines, is directly traceable to the limited quantities of nitric acid available for nitrating the naphthalene necessary for the production of phthalic acid, the starting point for making the eosines. So, while the war has an influence on the quantity of dyes available for use in neutral countries, the shortage is materially affected by the diversion of some necessary chemicals from the usual channels of trade.

Modern high explosives contain large quantities of nitrogen in combination with other substances. For example, explosive gun cotton contains about 14 per cent. of nitrogen, equivalent to 662 pounds of commercial nitric acid per 1,000 pounds of gun cotton. From the rate at which the various armies are employing smokeless powder, one can imagine that the amount of nitric acid equivalent is immense. The curtailment alone of the coal tar raw materials may not be the sole cause of American dyers being compelled to make shift with limited supplies, although it is known that the dye works abroad are not in receipt of their usual quota of raw material.

It has been claimed that Germany is in a position to produce its own supply of nitric acid by the new process which makes use of atmospheric nitrogen. While this is possible chemically, yet it is to be doubted if that country can be independent of outside sources of nitrate. This is in part confirmed by no less an authority than Prof. Witt, in a recent issue of the Chemiker Zeitung.

SHRINKAGE IN BLEACHING COTTON CLOTH

Editor Textile World Record:

We are receiving numerous complaints from our customers that our cotton goods shrink more than they should. The cloth is a good grade made from carded and combed peeler yarn. One of our customers complains that when we bleach his samples they are taken to his mill without being rolled and he got plenty of width, while on the regular goods we roll same and haul it quite a distance to his mill and the goods show a shrinkage. What I would like to know is if we did not roll the goods would it be possible to get a better width? Weymouth (2372).

It is difficult to state with a certainty where the trouble lies. It would seem that the fact that the goods were rolled up was the cause of the shrinkage. If this is the case I do not see why the goods could not be delivered unrolled. It would be very easy to have the goods folded double and shipped in this way. Measure the goods both before and after they are run off to see if they shrink during the operation of folding. It is quite possible that the goods are shrunk in the rolling of the material, especially if they have to be put under much tension to get them rolled up. It is well known that goods cannot be run without showing a little shrinkage. I have seen goods that have shrunk as much as half an inch after they have been made up and put into cases. Especially is this the case with high grade cloths and goods that are finished with a soft finish. I would advise "Weymouth" to have one lot of the goods run off and shipped to his customer in this fashion and see if he does not get the desired result. It will not cost any more than to roll them. It is quite evident if the samples are all right without

being rolled that they must have shrunk in width during the rolling operation.

Delco.

Dye Recipes

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 158

OLIVE SHADE ON WORSTED DRESS GOODS

Olive shade on 100 lbs. worsted dress goods. Prepare dye bath containing

3⅗ ozs. Amazo Blue.
1⅘ ozs. Amazo Brill. Red 2 B.
5 ozs. 53 grs. Amazo Fast Yellow L R. (American Dyewood Company, 80 Maiden Lane, New York City, N. Y.)
20 lbs. Glauber's Salt.
2 lbs. Oil of Vitriol.

Enter goods at 120° F. and bring to boil in 20 minutes to 1/2 hour. Boil 3/4 to 1 hour or to shade. Rinse.

The colors used to produce the above shade are recommended for their good leveling properties and all round good fastness.

Recipe No. 159

GREEN ON WORSTED DRESS GOODS

Green on 100 lbs. worsted dress goods. Prepare dye bath containing:

2 lbs. Amazo Green B.
420 grs. Amazo Brill. Red 2 B.
1 oz., 17 gr. Amazo Fast Yellow L R. (American Dyewood Company, 80 Maiden Lane, New York City, N. Y.)
20 lbs. Glauber's Salt.
3 lbs. Oil of Vitriol.

Enter goods at 120° F., bring to boil in 20 minutes. Boil 1 hour. Rinse.

The colors used to produce this shade of green are of very good fastness to light and are recommended for their level dyeing properties.

Recipe No. 160

DARK GREEN ON WORSTED YARN

Oxychrome Dark Green 5 G O O on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Oxychrome Dark Green 5 G O O. (Geisenheimer & Co., 189 Front St., New York, N. Y.)
5 lbs. Acetic Acid.
15 lbs. Glauber's Salt.

Enter at 120° F., bring to a boil and dye at a boil for one hour, and then exhaust the bath by adding

25 lbs. Sulphuric Acid.

Cool bath to 158° F., add

2 lbs. Potassium Bichromate,

and after treat to a boil for 3/4 of an hour.

Oxychrome Dark Green 5 G O O possesses very good fastness in nearly every respect.

Recipe No. 161

BROWN ON COTTON YARN

Katigen Cutch 5 R L on 100 lbs. cotton yarn. Prepare the dye bath with

20 lbs. Katigen Cutch 5 R L. (The Bayer Co., 117 Hudson St., New York, N. Y.)
10 lbs. Sodium Sulphide (Conc.).
80 lbs. Glauber's Salt (Crystal).
8 lbs. Soda Ash.

Dissolve color together with sodium sulphide, add to the main dye bath and boil up with the Glauber's Salt and Soda Ash.

Dye at a temperature just below the boil for one hour.

Katigen Cutch 5 R L possesses very good fastness to light

Recipe No. 162

SCARLET ON COTTON YARN

Napthtamine Fast Scarlet E 4 B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Napthtamine Fast Scarlet E 4 B. (Kalle Color & Chemical Co., 530 Canal St., New York, N. Y.)
30 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for one hour.

Napthtamine Fast Scarlet E 4 B possesses very good fastness for a direct cotton color.

Recipe No. 163

WOOD COLOR ON WORSTED YARN

Lemon Flavine on 100 lbs. worsted yarn. First mordant the yarn in a bath made up with

5 lbs. Tin Crystals.
2½ lbs. Tartar. (A. Klipstein & Co., 644 Greenwich St., New York, N. Y.)

Enter at 120° F., bring to boil and boil at least 1 1/4 hours.

Then enter dye bath made up with

1 lb. Lemon Flavine,
(A. Klipstein & Co.)

at 120° F. Bring slowly to a boil and boil for not less than 1 1/4 hours.

Lemon Flavine is a wood dye of good fastness and will be found to be of particular interest at the present time.

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Recipe No. 164

RED ON UNION CLOTH

Union Red 83406 on 100 lbs. cotton worsted union cloth. Prepare the dye bath with

2 lbs. Union Red 83406.
30 lbs. Glauber's Salt.
(Cassella Color Co., 182 Front St., New York, N. Y.)

Enter at 120° F., raise bath gradually to a boil and dye near boiling point for 3/4 of an hour. If the wool is then found to be insufficiently dyed, raise temperature to boil and boil another 15 or 20 minutes.

Union Red 83406 will be found to be an excellent color for producing even results on all kinds of union material.

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Recipe No. 165

BLACK ON COTTON YARN

Zambesi Black 2 B A on 100 lbs. cotton yarn. Prepare the dye bath with

8 lbs. Zambesi Black 2 B A.
(Berlin Aniline Works, 213 Water St., New York, N. Y.)
30 lbs. Glauber's Salt.
2 lbs. Soda Ash.

Enter at 180° F. and dye at a boil for one hour. Rinse and diazotize by working for 1/2 hour in a cold bath made up with

3 lbs. Nitrite of Soda.
6 lbs. Sulphuric Acid, 168 Tw.

Rinse and develop in another cold bath for 1/2 hour made up with

¾ lb. Toluylene Diamine.
1¼ lbs. Soda Ash.

Zambesi Black 2 B A possesses good fastness in most respects.

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Recipe No. 166

VIOLET ON COTTON YARN

Oxamine Brilliant Violet R X on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Oxamine Brilliant Violet R X.
(Badische Co., 86 Federal St., Boston Mass.)
25 lbs. Common Salt.

Enter at 180° F. and dye at a boil for one hour.

Oxamine Brilliant Violet R X possesses the general properties of direct cotton colors and is well suited for union dyeing.

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Recipe No. 167

BLUE ON COTTON YARN

Katigen Direct Blue B F Ext. Conc. on 100 lbs. cotton yarn. Prepare the dye bath with

6 lbs. Katigen Direct Blue B F Ext. Conc.
(Bayer Co., 117 Hudson St., New York, N. Y.)
9 lbs. Sodium Sulphide, Conc.
8 lbs. Soda Ash.
40 lbs. Common Salt.

Boil up the bath, enter yarn, and dye just below boil for one hour. After dyeing rinse immediately.

Katigen Direct Blue B F Ext. Conc. possesses very good fastness to light, washing and alkali.

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Recipe No. 168

WOOD DYE ON WORSTED YARN

Lemon Flavine on 100 lbs. worsted yarn. First mordant the yarn with

3 lbs. Potassium Bichromate,
2½ lbs. Cream of Tartar,

entering at 120° F., bringing bath slowly to a boil and boil for 1 1/4 hours.

Then dye in a bath made up with

8 lbs. Lemon Flavine,
(A. Klipstein & Co., 644 Greenwich St., New York, N. Y.)

entering at 120° F. and dyeing at a boil for not less than 1 1/4 hours.

Lemon Flavine is a wood dye of good fastness and will be found to be of particular interest at the present time.

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Recipe No. 169

GREEN ON COTTON YARN

Oxamine Brilliant Light Green 3 G on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Oxamine Brilliant Light Green 3 G.
(Badische Co., 86 Federal St., Boston, Mass.)
20 lbs. Glauber's Salt.

Enter at 180° F. and dye at a boil for one hour.

Oxamine Brilliant Light Green 3 G possesses in general very good fastness for a direct cotton color.

New Machinery and Processes

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to the textile manufacturers. It is not a list of patents but of improvements on the market, the idea being to present to our readers a systematic monthly record of new machinery, etc., of interest to textile mill men.

Whenever possible we endeavor to make a personal investigation of the new machinery and processes described in this department. In the absence of such personal investigation we must necessarily rely upon information obtained from those who control the machines and processes.

We invite machine builders and others to send us such information for this department.

Portable Keyseater. John T. Burr & Son, 429 Kent Ave., Brooklyn, N. Y. An improved portable keyseater for shafting, direct connected with an electric motor. A description appears in another part of this issue.

Dobby Motion. James Hall & Sons, Keighley, England, have recently placed on the market an improved double lift cross border dobby motion.

Spindle Reversing Motion. Asa Lees & Co., Oldham, England. An attachment for enabling the spindles of mules to be quickly reversed in order to change the direction of the twist.

Doffer for Flyer Frames. J. B. Farrar & Sons, Halifax, England. A mechanical doffer for flyer spinning frames.

Reed Release Motion. George Keighley, Ltd., Burnley, England. An attachment to the loom by which a reed can be made loose or stationary in the lay as desired.

Letting-Back Motion for Looms. Starkie Bros., Burnley, England. A device for letting back the cloth on the loom in order to prevent uneven places.

Reclaiming Cotton from Rope. William Nisbet, Heyside, near Oldham, England. A machine for untwisting and cutting cotton rope preparatory to converting the material into soft waste to be reclaimed.

Automatic Loom. George Hattersley & Sons, Ltd., Keighley, England. An automatic shuttle changing loom which has been thoroughly tested and is said to offer a number of important advantages.

Carbonic Acid Gas Thermoscope. Underfeed Stoker Co., South Place, London, E. C., England. An instrument for determining the quantity of carbonic acid gas in furnace gases in testing the value of coal.

Cop Bleaching and Dyeing Machine. J. H. Riley & Co., Bury, England. An improved machine for bleaching and dyeing yarn on cops.

A Hank Counter. Markt & Co., London, E. C., England, have recently placed on the market a counter for indicating hanks on spinning and similar machines.

Finishing Process. The Societe des Manufactures N. N. Konchine, Serpuchow, Moscow. A process for producing imitations of weave effects on finished goods by passing the cloth between calender rolls.

Variable Speed for Ring Frames. The Forest Car Co., Liverpool, England. An attachment for ring frames in order to vary the speed of the spindles during the rise and fall of the ring.

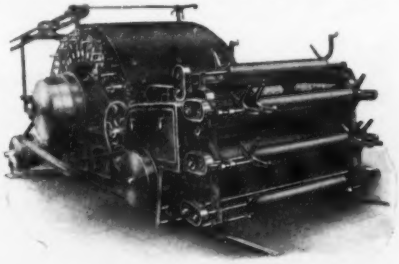
Warp Stop Motion. The Textilmaschinenfabrik Schwenningen, Schwenningen, Germany. An improved warp stop motion for looms which has been developed in German mills.

Warper. Gebrueder Sucker, Selesia, Germany. An improved warping machine which is provided with a stop motion which operates when a thread breaks.

Cap Spinning Frame. The Saechsischen Maschinenfabrik Richard Hartmann, Chemnitz, Germany, have recently brought out a novel form of cap spinning frame which, it is claimed, prevents the twist from getting into the roving and causing the thread to break.

PREPARING ABSORBENT COTTON

In view of the efforts which are being made to secure trade formerly held by the various European countries now at war, it would appear to be an opportune time to consider the possibilities of manufacturing absorbent cotton wool, both for home trade and for export. It is stated that in normal times Germany alone has been responsible for fully 75 per cent. of the world's output of this commodity. At the present time the manufacturers in England are engaged on

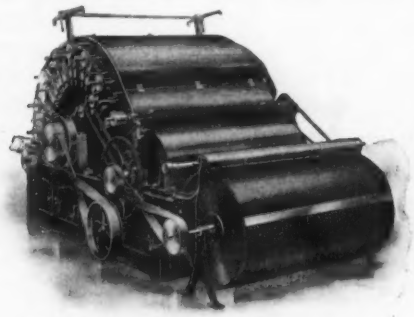


CARDING ENGINE WITH LEATHER TAPE CONDENSER

government orders with the result that retailers find it almost impossible to supply the requirements for hospital and domestic purposes.

Absorbent cotton is usually made from a grade of cotton waste known as "linters" consisting of short fibers which are a residue of the ginning process. The material as it arrives in bales is in a more or less matted condition, and is first passed through a willowing machine which loosens the stock, removes a great portion of the shell and chip and prepares it for the process of washing, bleaching and making antiseptic.

Wm. Tatham, Ltd., Rochdale, Eng., who make a specialty of all kinds of machinery for treating cotton waste, have given us the following interesting account of the preparation of absorbent cotton, and will take pleasure in supplying further information on application, either direct or to their agent, William Firth, 200 Devonshire St., Boston, Mass. The cotton is boiled from 8 to 10 hours in caustic soda liquor in a steel open top circulating kier. After blowing off the caustic liquor and rinsing with water, the cotton is again boiled for about two hours in clean water. After the second boiling it is removed from the kier, thoroughly washed in a drum washing machine, then taken to a chemicking and souring cistern and treated with soda chemic. It is now rinsed with water in the same cistern, soured with sulphuric acid and then rinsed off while still in this cistern. After removal from the souring cistern it is again thoroughly washed in the drum washing machine until all trace of chemicals is removed. The bleached material is taken to a hydro-extractor to remove as much as possible of the moisture and is then ready to be made antiseptic. To accomplish this it is immersed in a solution in a wooden beck, being turned over by means of poles, and is then passed again through the hydro-extractor preparatory to



CARDING ENGINE WITH FLEECE DRUM FOR ABSORBENT COTTON WOOL

being taken to a drying machine, the latter being of a continuous type.

When received from the bleachers the material is in a more or less matted condition. To prepare it for carding it is first passed through a single scutching machine. A toothed cylinder is substituted for the usual bladed beater, as the former has a more pronounced combing action on the matted material. The machine is fitted with a delivery lattice which delivers the material in a loose state ready for placing on the hand feeder of the carding engine. For large sized plants it might be advisable to make a lap at the scutcher and have single lap feeders on the carding engines in place of hand feeders. The carding engine used is of the roller and clearer type with certain modifications to

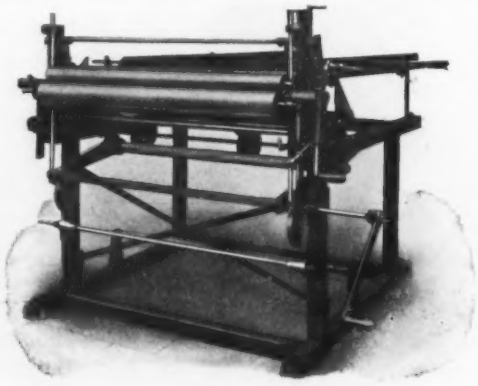
suit the short stapled cotton, see illustration. The function of this machine is to card the material so that the fibers are laid parallel and any shell or foreign matter removed. The carded material leaves this machine in a very thin web or fleece. In order to obtain the required thickness it is necessary for numerous layers of the fleece to be placed together. This is done by means of a wood fleece drum at the back of the carding engine. As the web is stripped from the latter it is wound round the fleece drum, and layer on layer is added until the desired thickness is obtained. The web is then cut across and removed from the fleece drum in a sheet 7 ft. 6 in. long, and about 40 or 48 in. wide, according to the width of the carding engine.

For convenience in handling, the material is put up in the form of a roll, usually with a

CUTTING MACHINE FOR ABSORBENT COTTON WOOL

sheet of paper inserted and rolled along with it. To accomplish this a wadding rolling or winding machine is used. The sheet of absorbent cotton is laid on the table of the machine the sides of which are adjustable to suit various widths of material. It is then passed between a pair of iron calender rollers to the lap rod, which is made in halves, between which the edge of the wadding is inserted. By turning the handle attached to the lap rod, the roll is wound between two iron winding rollers and an iron compression roller. As the roll becomes larger in diameter the compression roller lifts vertically, maintaining a constant pressure, thus ensuring uniform rolling and preventing distortion of the sheets. The paper insertion is fed from a roll of paper placed under the machine, and when the required diameter of the roll is obtained, the paper is cut by a knife operated by a lever. The roll is then ready to be removed from the lap rod. The rolls can be made of any diameters up to 4 1/2 inches.

The final operation is that of cutting the rolls into suitable lengths for the retail trade,



ROLLING MACHINE FOR ABSORBENT COTTON WOOL

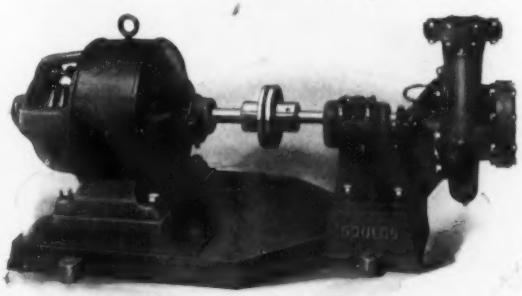
12 inches being the usual length. For this purpose the roll cutting machine shown in the illustration, is used. The roll to be cut is placed in a sheet metal holder or support, by which it is firmly held while being cut by a reciprocating horizontal knife, the holder being slotted to give access to the knife blade. As the roll is cut, the support or holder which carries it is raised by a lever and weight, which can be readily adjusted to maintain the required pressure against the knife blade. An adjustable measuring scale is provided to enable rolls of equal length to be cut.

For rolls an additional holder is required, and can be supplied of various diameters from 1 1/4 to 4 1/2 inches in diameter. The machine can also be arranged to cut bandages into narrow widths from the roll of cloth by removing the single holder shown in the illustration and substituting a special holder mounted upon a table and arranged

for holding several rolls placed side by side. These can be cut simultaneously into bandages of any width.

THE GOULDS CENTRIFUGAL PUMP

Many years of successful service has proved the value of the centrifugal pump in textile mills for raising not only water, but fluids of all kinds, including dye, soap and chemical solutions. Among the leading types of these pumps which have been used for textile purposes have been those built by the Goulds Mfg. Co., Seneca Falls, N. Y. The illustration shows an improved single



AN IMPROVED SINGLE SUCTION ENCLOSED CENTRIFUGAL PUMP

suction enclosed centrifugal pump built by this company and which has been developed to meet the demand for high efficiency in a moderately priced machine. It is especially adapted for direct connection to electric motors. The pump is also built for belt drive if desired. The range of capacity and head can be accommodated at motor speeds readily obtainable in direct current and in alternating current of 25, 50 and 60 cycles frequency.

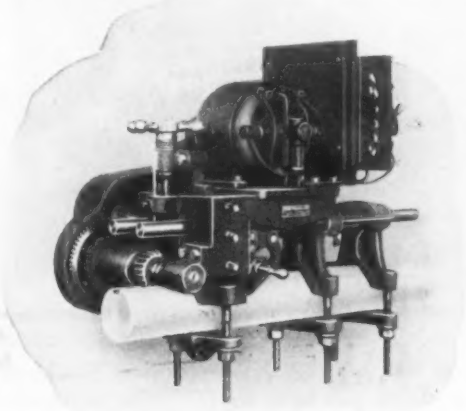
The casing is of the volute type, supported on the bed-plate so that it can be swivelled in any one of eight different positions. This feature is of convenience where space for pipe fittings is limited, and also allows a discharge elbow to be dispensed with. In order to secure high efficiency the impeller is of the enclosed type. It is hydraulically balanced against end thrust, as well as statically and dynamically. All main bearings are of the ring oiling type, sizes 5 and 6 having two rings. The pump consists of but very few parts and it has the utmost simplicity of design.

The impeller is regularly made of close grained gray cast iron, is of the enclosed type and is designed for high efficiency over a wide range of conditions. The slight amount of end thrust occurring in operation is taken up by shaft collars bearing upon babbitted surfaces which are subject to positive lubrication. These collars also serve to space the impeller properly in the casing. The impeller is pressed upon the shaft and is held firmly in place by a carefully fitted pin.

The shaft is made of high carbon, open hearth steel, accurately machined to gauge, and of ample size to transmit the maximum power required. The casing is of the volute type, made of best quality gray cast iron of uniform thickness of section, and of ample strength to withstand the maximum working pressure of the pump. The waterway, or volute, is carefully proportioned to convert the energy of velocity of the water leaving the impeller into pressure, with the minimum of loss due to shock or eddies.

THE BURR PORTABLE KEYSEATER FOR SHAFTING

Textile manufacturers will appreciate without explanation the advantage of a new



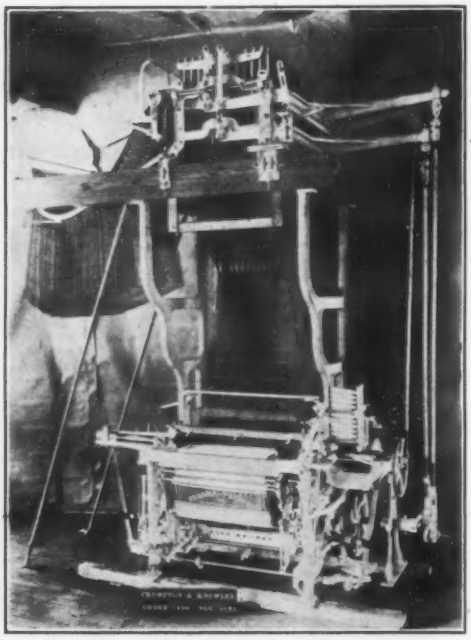
THE BURR PORTABLE KEYSEATER FOR SHAFTING

portable shaft keyseater such as that shown in the illustration, built by John T. Burr & Son, 429 Kent Ave., Brooklyn, N. Y. It

enables key seats to be cut in shafting without taking the latter down and is almost indispensable for repair work in textile mills. For many years the Burr portable keyseater was built to be operated by hand, but the improved tool is driven by a direct connected motor, as shown. It is more strongly built than the hand machine and possesses many advantages over the latter.

AN AUTOMATIC TOWEL LOOM

The illustration shows an automatic Crompton towel loom, 2 by 1 box, which the Crompton & Knowles Loom Works, Providence, R. I., have recently built for the California Cotton Mills Co., Oakland, Cal. The jacquard is tied up to weave towels with



A CROMPTON AUTOMATIC TOWEL LOOM TO BE EXHIBITED AT THE PANAMA-PACIFIC EXHIBITION

a border bearing the inscription "Panama-Pacific Exposition, 1915." The loom was shipped direct to the San Francisco exposition where it is to be exhibited.

An acreage of 14,710,000 is reported to be under the early Indian cotton crop.

A NEW CROCKER-WHEELER TEXTILE MOTOR

The illustrations show an improved new motor especially designed for textile mills by the Crocker-Wheeler Co., Ampere, N. J., and which offers a number of advantages. Among these is the freedom from fire hazard, which is obtained by squirrel cage motors which eliminate brushes and commutators. The motor is operated by textile switches designed for the purpose and handling the contacts under oil.

Another advantage is that the motor is capable of handling sustained overloads

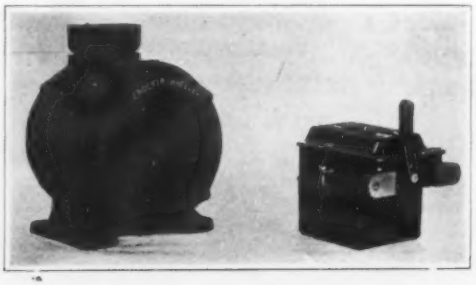


FIG. 1. THE ASSEMBLED MOTOR

without injury. This is especially important in textile mills where the load is liable to vary so widely, not only from season to season, but from day to day and during the same day.

To accomplish these results the motor has been designed so that no ventilating ducts, forced ventilation or enclosing covers are required. The motor is of very compact construction and the shafts heavier than on standard motors, the bearings being proportionately large and dust proof. Very little space is required for this motor. There are ample oil reservoirs which obviate the necessity of frequent filling and they can be easily cleaned and refilled. The bearings are designed to prevent oil slinging and to prevent not only the windings, but the floors from becoming oil-soaked. The design is well balanced to give high efficiency.

Fig. 1 shows the assembled motor. The oil can be drawn off with an oil gun, the wells cleaned and then refilled with oil at regular intervals without interfering with

the operation of the textile machine. The junction box shown on the top of the motor through which connections are made to the line, is a standard box and will take either pipe conduit or flexiduct standard fittings. As in all other conduit boxes, holes can be made in the box from any side which allows the wiring to be connected to the motor terminals neatly. The textile switch which has been designed expressly for textile

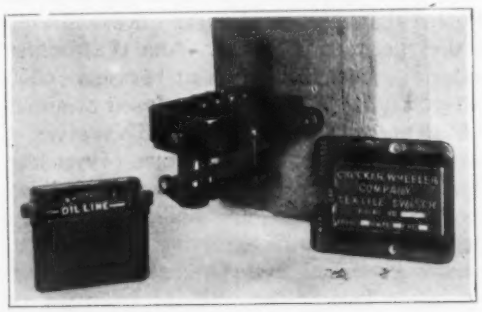


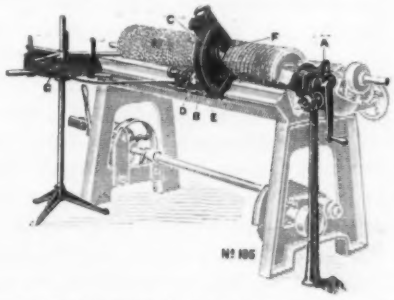
FIG. 2. THE OIL SWITCH WITH THE TOP COVER AND OIL TANK REMOVED

work is also shown in Fig. 1. The shifting of the shipper handle shown connected to the switch lever throws the motor on or off.

Fig. 2 shows the oil switch with the top cover and oil tank removed. The moving part carrying the contact switches from one side to the other which makes cross connections between the terminals are also shown. All contact making and breaking is under oil. The switch is easily connected by wire conduit or flexiduct, making wiring to both the motor and the switch safe from damage. Further information regarding this motor can be obtained from the manufacturers.

THE DRONSFIELD LICKER-IN WIRE MOUNTING MACHINE

The illustration shows a new machine built by Dronsfield Bros., Ltd., Oldham, England, for reclothing lickers-in at the mill. It has recently been improved by adding a device for reclothing or remounting new wire when the old wire has become badly worn or damaged. The illustration shows the machine mounting new wire on a licker-in. When it is desired to repair old wire the mounting head is replaced by a dressing tool, the latter not being shown in the illustration. The



THE DRONSFIELD MACHINE FOR RECLOTHING LICKERS-IN

apparatus can be fitted on the licker-in grinding and dressing machine without making any alteration.

CONCRETE CONSTRUCTION AND THE EDISON FIRE

By Leonard C. Wason, President, Aberthaw Construction Co. for the Boston Manufacturers Mutual Fire Insurance Co.

It will, perhaps, be helpful to consider a concrete building in terms of the components which make it up, rather than to consider it as one material of reinforced concrete. Reinforced concrete is made of sand, stone, and Portland cement, with steel bars placed in this. Anything which will destroy any one of these materials will, of course, cause the failure of the concrete. The cement and stone are held together by the cement mortar. The Portland cement has been made by grinding a natural rock, adding some few missing constituents, and passing this through a kiln which is heated on an average from 2700° to 3000° F., and some cements require heating only to 2300°. This heat drives off the water of crystallization and forms a clinker which, when ground, has the property of taking up water and again hardening into a stone. It is possible to drive off the new water of crystallization by a reapplication of heat, and if this is done the cement becomes a weak powder with no binding qualities.

Steel becomes ductile at a comparatively

low temperature. The strength of a reinforced concrete structure depends upon the compressive strength of the concrete and upon the tensile strength of the steel. If the steel stretches, the floors will sag under load.

If the stone is of such a nature that it crumbles under heat, it will cause soft pockets to form between the films of mortar which hold the stones in place, and these thin films will readily heat and break away.

Accordingly, in order to secure a fire-resisting concrete, it is necessary to select a stone which will not readily crumble under heat, to bury the steel so deeply in the concrete that the heat generated by a contents fire cannot raise the temperature of the steel to its softening point, even after some of the surface of the concrete has been spalled off by the fire or water action. There is hardly enough known about the effect of fire on the sand particles in the mortar to give any data regarding the effect of fire upon this material of the concrete.

It is to be remembered also that when concrete is poured in large sections, after setting and during the hardening process of several months it shrinks, producing internal stresses. It is impossible to anneal the material or to do anything to relieve these stresses in the material. The steel bars embedded in the concrete cross many of these lines of stress and tend to hold the whole mass from cracking. If any heavy blow is struck, or if any expansion on account of heat takes place, cracks are likely to occur at the points of worst stress.

All this has been recognized for years by designers of reinforced concrete, and all the points, with the exception of the selection of sand, have been carefully considered and generally standardized. Concrete buildings have repeatedly been subjected to contents fires without serious structural damage, but designers and insurance companies have insisted that no less care should be expended on sprinkler protection, cut-off walls, and all other means of minimizing the extent and intensity of a fire in these buildings than has been given to buildings of other types. The wisdom of this course is clearly shown in the fire under consideration, where these principles were not followed.

All authorities agree that the Edison fire was an unusually hot one. The report on the contents of the buildings indicates that this should be so. I was interested in determining, as closely as may be, the temperatures that actually obtained in these buildings. I found what appeared to be molten cast iron adhering to the full length of one of the wall columns. This I had analyzed, and found that it was cast iron, probably from one of the down spouts. Analysis showed that there was some silica and lime in the specimen, probably from the roofing material. Cast iron melts at between 1900° and 2200° F. This specimen fused at about 100° less than the average. This gives a fair assumption of a temperature of not less than 1900° F. at the south side of the third floor of the disc finishing building (No. 24). On the curtain wall adjoining this column, window glass had melted and run down over the inside face of the wall for from six to thirty inches in a thin film. So thin a film indicates that the glass was melted.

The melting point of glass varies, according to its quality, from 1800° to 2100° F. At this point, Mr. Thomas A. Edison stated that there were fifteen tons of wax, besides wax phonograph records, packed in excelsior in wooden boxes. A photograph of this building taken during the fire shows that the wind was blowing through this building, so that the smoke was going out on the southerly side. All contents of the whole floor were burning at once. Accordingly, air coming in from the windward side would be gradually heated until intensely hot air was being introduced into a fire of burning wax, producing practically blast furnace conditions. The temperatures in many places were probably considerably above that of the column from which the sample of melted cast iron was taken. It is reasonable to assume that temperatures were reached as high as those of the interior of a cement kiln.

Considering the intensity of the fire, the effect upon the concrete was surprisingly slight. The corners of the square columns suffered the most. These were spalled off to an average of about four inches. The damaged faces of the column were being

chipped off, so that it was possible to determine this accurately. The shape of the final chipped column was practically a circle, owing to the loss of the corners. Two causes combined to spall off these corners. Neither of them had to do with the dehydration of the cement in the concrete. The material is brittle, and under heat the temperature of the corners will rise more rapidly than the mass of the column, as the heat can penetrate from two sites. The result in general would be similar to heating a piece of brittle glass on one side. This will expand and crack away from the unheated balance of the sheet.

There were in all the columns 7/8-inch square twisted rods placed vertically. Some of these were set back well into the concrete, and some of them came very close to the corners. When the heat reached these bars thy expanded and buckled and helped to make a line of cleavage in the plane in which they occurred. The combination of buckling of the steel bars and the strains in the concrete probably caused the spalling of the columns, which is so clearly shown in the pictures. The effect of the fire upon the underside of the floors was very slight. The few failures resulted from primary damage to near-by columns. Most of the beams showed their original contour. Very little concrete has dropped off, and little of the reinforcing metal shows. The effect on the curtain walls is even less, the concrete not showing any marked deterioration. The particular point I wish to make is that the concrete, as a material, did not fail in its constituent elements, but the structure of the buildings did fail in some particulars, owing to the introduction of movements and stresses not foreseen or provided for in the design. Had the buildings been made of any other material, and subjected to any unexpected movements and stresses, the results might have been very much more serious than they were in the case of the concrete.

The wall columns on the third floor of the disc finishing building (No. 24) on the southerly side, and those in the buildings facing on Lakeside Avenue, third story, southerly side, appeared to be the most damaged. A number of these were sheared completely in two, allowing the building to sag materially. There was evidence that the third floor was much hotter than those below. If the concrete of the floor was raised to a temperature of 1500° it would expand in a length of fifty feet about six inches, and relatively to the cooler lower stories, probably more than three inches. This would at first bring a greater bending moment in the columns than they were capable of withstanding, and then the columns would shear.

A plumb line was dropped from the head on one column which had failed, in the disc finishing building (No. 24), and showed that at present it was 1 3/4-inch off center from the same column at sill height below. This would indicate that the floor has never come back to its original dimension, but has a permanent set. There was an 8-inch solid concrete curtain wall about three feet high from the floor to the window-sills which held these columns rigidly in place, so that they could not readily yield as would the interior columns, or as would the corner columns. There was a V crack visible between a number of curtain walls and their columns, the point of the V being at the floor line and the widest part at the window-sill height, which indicates that the floors pushed horizontally from the middle toward each end of the building. This failure is doubtless due to shearing action caused by the horizontal movement of the floors.

Regarding the apparent quality of the concrete, the material appeared to be good, the workmanship careful and conscientious. So far as I could judge, the concrete was mixed with a little less stone than is usally used. I should judge that the proportion might have been of about equal parts of mortar and stone, instead of twice as much stone as mortar, as is the common practice. The sand was got from a neighboring pit, and was somewhat finer than the best concrete sand. The stone, partly gravel and partly crushed trap, was of a quality which resisted fire well. I was told that some of the stone was tailings from a mine. The size of the stone was that which would pass a 1 1/4-inch ring. The mixing and placing appear to have been good.

From observations of the portion of the floor that fell, it was apparent that beams and girders had been cast in advance of the slab and allowed to set, so that there was no bond between the two, and that there were no stirrups introduced in order to unite the two. The stirrups where here exposed were confined to the beams themselves, and appeared to be bent into rectangles with a lap below the main reinforcing bars. At some other points where floors had failed, the slab and beams were well bonded, which would indicate that they were sometimes cast together and sometimes separately. This was the only defect, due to the method of construction, that was manifest to the writer, and the use of stirrups so designed as not to bond the beams and panels together was the only marked difference between this design and that practiced in the period in which these buildings were built, which was evident. However, these were not defects which were vital. They would not have saved the structure if they had been arranged according to present practice.

It was not usual in the early days of reinforced concrete to use hoops in columns. These were later introduced and first with the sole idea of conveniently holding the vertical bars in their proper place. They are now frequently spaced eight to twelve inches apart, which is much closer than is necessary for the one purpose of holding vertical bars in place while concrete is poured around them.

Wherever minor partitions were used, these were of 3-inch or 4-inch plaster of Paris blocks, and proved very inadequate to withstand the attack of flames, and were in all cases nearly total failures.

Where floors had a granolithic finish, in a number of places large sections were missing, which indicated that this finish was put on as a second operation after the structural portion of the floor had set. The finish measured from one and one-half inches to one and three-quarters inches in thickness, which is first-class, both as to design and workmanship, as it is very difficult to get a bond between the new and the old work. Even in spite of these severe conditions the bond was apparently broken in only a few cases.

It is estimated that the structural portions of the reinforced concrete buildings can be repaired for from ten per cent. to fifteen per cent. of their original cost. Practically all other buildings of other materials in the fire zone of this property were complete losses.

It is not surprising that the buildings are damaged. The real surprise is that they are not damaged a great deal more. The real lesson to be learned from this fire is that one cannot with impunity ignore or defy all the laws in experience of fire prevention and protection and escape the consequences.

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A GOLDEN ANNIVERSARY

William Whitman and his wife celebrated their golden wedding anniversary on January 17th at their home in Brookline, Mass. At the receptions held both afternoon and evening hundreds of social and business friends called to extend their congratulations.

Mr. and Mrs. Whitman were married in Cambridge, Mass., in 1865. They have made their home in Brookline for more than thirty years and for twenty-two years have occupied Ravensknowle, their large estate in the southern portion of the town.

With the exception of one daughter residing in California, all of their seven children were present and five of their fifteen grandchildren. Mr. Whitman's brother, Clarence Whitman of New York, was also present.

Mr. Whitman is as active as ever in business, making his headquarters at the Boston office of William Whitman & Co., of which he is the senior partner. Mr. Whitman was for many years treasurer of the Arlington Mills, of which his son-in-law, Franklin W. Hobbs, is now president. He was widely known as the president of the National Association of Wool Manufacturers, which position he held for a long time while the strenuous battles for protection were being fought. Other important mill connections include the Manomet Mills, Nonquit Spinning Co., Nashawena Mills at New Bedford, Monomac Spinning Co., Lawrence, the Hoosac Worsted Mills, North Adams, Mass., Hope Webbing Co., etc.

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PERSONALS.

William J. Eddy, treasurer of the Franklin Mills Corporation, Unionville, Mass., has severed his connection with that company. Mr. Eddy has made no definite plans for his future.

David Matthews, overseer of finishing at the Waucantuck Mill, Uxbridge, Mass., has resigned his position with that company to accept a similar one with the Richardson, Foster Co., commission dyers and finishers, Central Falls, R. I.

Personals

George H. Snow has accepted the position as overseer of carding at the Bridgewater Woolen Co., Bridgewater, Vt. He comes from North Oxford, Mass.

Arthur Frederick, overseer of dyeing at the Pontoosuc Woolen Manufacturing Co., Pittsfield, Mass., has severed his connection with that company.

Edward A. Ducharme has been appointed overseer of dyeing at the Pontoosuc Woolen Manufacturing Co., Pittsfield, Mass.

William H. Ryder, Jr., overseer of finishing at the Richardson, Foster Co., Central Falls, R. I., has resigned his position with that company.

Archibald Ormiston has accepted the position of overseer of dyeing at the Lebanon Mill, American Woolen Co., Lebanon, N. H. He succeeds John Lawton, who goes to the Mayo Woolen Co., Millbury, Mass. Mr. Ormiston comes from Bridgton, Me.

Frederick A. Henderson, for the past sixteen years employed at the plant of the Hope Webbing Co., Pawtucket, R. I., has resigned to accept the position of superintendent of the Pawtucket Tape Co., Pawtucket, R. I. The employes of sections A and B of the plant, over which he had supervision, presented him with a traveling bag, silk umbrella, signet ring and quantity of cigars.

Harry Gill has accepted the position of overseer of dyeing at the Ottaquechee Woolen Co., Evarts, Vt. He was formerly employed at Carolina, R. I.

Ulric Burke has accepted the position of overseer of dyeing at the Carolina Co., Carolina, R. I.

Frank F. Tobin has accepted the position of overseer of dyeing at the Corinna Mfg. Co., Corinna, Me. He comes from Holyoke, Mass.

L. J. Gruber has been appointed superintendent of the Lawrence, Webster Co., Malone, N. Y. He was formerly employed at the Lewisburg Woolen Co., Lewisburg, Pa., but comes from Schagticoke, N. Y.

Thomas Rawley, superintendent of the Lawrence, Webster Co., Malone, N. Y., has resigned his position with that company.

James Callahan has been appointed overseer of weaving for Charles A. Stevens & Co., Ware, Mass. He comes from Northboro, Mass.

Charles Fralick has accepted the position of overseer of carding for Charles A. Stevens & Co., Ware, Mass. He was formerly employed at the Newport Woolen Co., Newport, Me.

Sidney C. Bailey has accepted the position of overseer of weaving at the Meredith Linen Mill, Meredith, N. H.

Guy C. Templeton has accepted the position of overseer of finishing at the Berkeley Woolen Co., Martinsburg, West. Va. He was formerly employed at the Burlington Mill, Winooski, Vt.

James Cunningham has been appointed overseer of bleaching at the Adams Manufacturing Co. Shelton, Conn. He was formerly employed at the Mansfield Bleachery, Mansfield, Mass.

John W. Doubleday, for twenty years president of the Empire Worsted Mills, Jamestown, N. Y., and one of the best known woolen merchants, has withdrawn from active work with the company. He was practically owner of the Empire Worsted Mill and the Acme Worsted Mill of Jamestown. Mr. Doubleday is planning a trip for California, but will remain as honorary president of the Jamestown concern.

Charles J. Brown has been appointed superintendent of the Nonotuck Silk Co., Florence, Mass., to succeed Charles A. Huxley, who has resigned on account of ill health. Mr. Huxley has been in the employ of this company for the past forty years. Mr. Brown comes from St. John, P. Q., Canada.

W. B. Barr has accepted the position of overseer of dyeing at the Berkeley Woolen Co., Martinsburg, West Va.

George S. Caine has accepted the position of superintendent of the bleaching and finishing plant of the Cannon Manufacturing Co., Kannapolis, N. C. He was formerly employed at the Riverside Mills, Worthville, N. C.

C. D. Maigatter has been appointed superintendent of the Pickett Mill, High Point, N. C.

J. O. White, general manager of the Moore Cotton Mills, Lenoir, N. C., has been elected president of that mill to succeed F. P. Moore. Mr. Moore will remain as treasurer of the mill.

T. A. Adams, secretary of the South Texas Cotton Mills, Brenham, Texas, is now also superintendent of that mill.

George F. Brietz has been appointed superintendent of the Selma Mills, Selma, N. C. He was formerly employed at the Kinston Cotton Mills, Kinston, N. C.

T. B. Murphy has accepted the position of overseer of weaving, warping and slashing at the South Texas Cotton Mill, Brenham, Texas.

A. Ingraham has accepted the position of overseer of carding and spinning at the Valatie Yarn Co., Valatie, N. Y. He comes from Laconia, N. H.

Carl Moore has accepted the position of chemist at the Atlantic Mill, Providence, R. I. He was formerly employed at the Stillwater Worsted Co., Harrisville, R. I.

George Fraser, overseer of carding at the Brampton Woolen Co., Penacook, N. H., has resigned his position with that company.

Charles A. Taylor, overseer of the cloth room, and James McNab, second hand in the weave room at the B. B. & R. Knight Mill, Centreville, R. I., have resigned to accept similar positions with the Stark Mill, Manchester, N. H.

Charles Hart, second hand in the weave room at the Butler Mill, New Bedford, Mass., has accepted a similar position with the B. B. & R. Knight Mill, Centreville, R. I.

Joseph Suprenant has been appointed second hand in the spinning department at the B. B. & R. Knight Mill, Centreville, R. I.

Richard Twohig has accepted the position of overseer of carding for W. E. Hayward & Co., East Douglas, Mass., to succeed Fred Gunther.

John P. McCavitt, overseer of spinning at the B. B. & R. Knight Mill, Centreville, R. I., has resigned his position with that company to accept one with the Stark Mill, Manchester, N. H.

Frank Pace has been appointed overseer of the cloth room at the Merchant Mill, of the Dominion Textile Co., Montreal, Canada. He was formerly employed at the Lyman Mill, Holyoke, Mass., as general second hand.

Robert E. Henry has been appointed superintendent of the Monaghan Mill, Greenville, S. C. For the past two or three years he has been general superintendent over the Springstein Mill at Chester, S. C., and the Fort Mill Manufacturing Co., Fort Mill, S. C.

J. E. Williamson succeeds Robert E. Henry as general manager of the Springstein Mill, Chester, S. C., and the Fort Mill Manufacturing Co., Fort Mill, S. C. He was formerly employed at the Holt-Morgan Mill, Fayetteville, N. C.

Charles H. White has been appointed superintendent of the Puritan Cordage Mills, Louisville, Ky.

J. M. W. Jenkins is to be superintendent of the Harborough Mill, Bessemer City, N. C., when it resumes operations.

W. E. Tisdale has accepted the position of overseer of carding and spinning at the Edna Cotton Mills, Reidsville, N. C. He was formerly employed as overseer of carding at the Deep River Mills, Randleman, N. C.

N. M. Neal has accepted the position of overseer of weaving at the Riverside Mills, Worthville, N. C. He was formerly employed at the Edna Mills, Reidsville, N. C.

W. C. Kyle has been appointed general manager of the Nickajack Mills, Chattanooga, Tenn. He was formerly employed at the Chattanooga Knitting Mill in the same city.

E. D. Maynard has been promoted to superintendent of the Chronicle Mill, Belmont, N. C.

C. E. Tucker has been appointed superintendent of the new National Yarn Mill, Belmont, N. C. He was formerly employed in a similar position at the Chronicle Mills, same place.

George R. Paige has accepted the position of overseer of carding for A. Howarth & Son, Oxford Woolen Mill, Oxford, Mass. He comes from Franklin, N. H.

H. T. Clark has been appointed agent of the Harodite Finishing Co., North Dighton, Mass.

Arthur D. Lown has succeeded John P. Shaw as superintendent of the Manhasset Manufacturing Co., Putnam, Conn. Mr. Lown comes from Fall River, Mass.

C. R. Hosmer, who has been vice-president of the Canadian Cottons, Ltd., Montreal, Canada, has been appointed president of the company to succeed the late David Morrice. Mr. Hosmer is also a director of the Dominion Textile Co.

Obadiah Butler, who recently accepted a position with Canadian Connecticut Mills Co., of Sherbrooke, Canada, has been appointed general manager and secretary of the two mills owned by the company. Mr. Butler was formerly superintendent of the Bristol Mill, New Bedford, Mass.

Fred R. Elston has been appointed superintendent of the Sonnhill Worsted Co., Danielson, Conn.

At the annual meeting of the stockholders of the Centredale Worsted Mills, Centredale, R. I., held on Saturday, January 16, William A. Mackie retired as president and superintendent of the Centredale Mill; Rufus Mackie as superintendent of the Stillwater Mill, Stillwater, R. I., and Dennis Mackie as assistant superintendent of the Centredale Mill. James Lister, who has been treasurer of the company, has been appointed president; James J. Lister was appointed treasurer and Robert W. Lister, secretary and assistant treasurer. James J. Lister is now in charge of their three mills.

M. D. Capeless, overseer of finishing at the Ardmore Mill, Yantic, Conn., has resigned his position with that company.

Henry McGill, assistant overseer of finishing at the Ardmore Mill, Yantic, Conn., has severed his connection with that company.

J. A. Wilson has accepted a position as superintendent of the local plant of the American Felt Co., Franklin, Mass.

Alfred Abbey, superintendent of the Belding Silk Mill, Rockville, Conn., has resigned his position with that company. He has been in their employ for a number of years.

The stockholders of the Luzerne Silk Throwing Co., with mills at Freeland and Plymouth, Pa., appointed the following officers at a meeting which they held recently: E. R. Simpson, president; John B. Price, treasurer and H. B. Price, secretary. William J. Griffith was reappointed superintendent.

William Newton has been appointed superintendent of the National Silk Hosiery Co., Thornton, R. I. He is also president of the corporation.

Edward E. Magner has accepted the position of overseer of dyeing at the Sayles & Jenks Manufacturing Co., Warren, Mass., to succeed John Hartley.

John Edmonds, master mechanic at the Waltham Bleachery & Dye Works, Waltham, Mass., has resigned his position with that company, having been in their employ since 1892.

J. E. Cheesman, who has represented the Empire Duplex Gem Co. of New York City, has taken charge of the New England office of the Champlain Silk Mills of Brooklyn and Whitehall, N. Y. He will be located in the Industrial Trust Bldg., Providence, R. I., and succeeds G. C. Hinckley.

Joseph Dumas has accepted a position in charge of the fulling nights for James & E. H. Wilson, Pittsfield, Mass. He comes from Woonsocket, R. I.

John L. Davidson, for several years general manager of the Georgia Cotton Mills, Griffin, Ga., has been appointed superintendent of the Eureka Cotton Mills, Chester, S. C.

R. B. Hunt has been appointed superintendent of the Mississippi Cotton Mills, Moorhead, Miss.

M. E. Stevens has been appointed agent of the Mississippi Cotton Mills, Moorhead, Miss. He was formerly employed at the LaGrange Cotton Mills, LaGrange, Ga.

R. W. Bingham has been promoted to the position of overseer of spinning at the Springstein Mill, Chester, S. C.

Otto Latsch has been elected vice-president of the Southern Mills Corporation, Oxford, Ala.

W. F. Hetrick, assistant superintendent of the Hetrick Mill, Walhalla, S. C., has resigned his position with that company to accept the position of superintendent of the new hosiery mill being started at Gainesville, Ga.

R. A. Morgan, superintendent of the Lawrenceville Manufacturing Co., Lawrenceville, Ga., has resigned his position with that company to accept a similar one with a large mill at Shanghai, China.

J. P. Munroe has been appointed manager of the Pine Grove Manufacturing Co., Camden, S. C. He was formerly employed at Greenville, S. C.

Thomas Gray has been appointed master mechanic at the Thomaston Cotton Mill, Thomaston, Ga.

F. G. Asbelle has accepted the position as overseer of carding at the Seminole Manufacturing Co., Clearwater, S. C.

J. T. Knight has been appointed superintendent of the Wadesboro Cotton Mill, Wadesboro, N. C. He has held the position of overseer of spinning at this mill for a number of years.

H. F. Moody has been appointed superintendent of the Monaghan Mill, Greenville, S. C. He was formerly superintendent of the Victor Mill, Greer, S. C. He succeeds H. E. Bates who has accepted the position made vacant by Mr. Moody at the Victor Mill.

Edward J. King has accepted the position of overseer of carding at the Silurian Mill, Newton Lower Falls, Mass. He was formerly employed at the Norfolk Mill, Cochrane Manufacturing Co., East Dedham, Mass.

DEATHS.

John Baker, of Schofield, Mason & Co., manufacturers of rugs and carpets, Cumberland and Fairhill Sts., Philadelphia, Pa., died at his home in that city at the age of 52 years. His wife and two sons survive him.

Harry B. George, first assistant engineer at the American Print Works, Fall River, Mass., died January 1 at his home in that city, after a short illness, at the age of 35 years. He is survived by his wife and three children.

J. Herbert Smith, agent of the Quinebaug Co., Danielson, Conn., died at his home in that city. He had been forty years in the employ of the Quinebaug Co. and was promoted to the position of superintendent from overseer of the carding department. Later he was appointed agent. Mr. Smith was born in Killingly, Conn., Dec. 14, 1850. Fraternally he was connected with the Masons, being a valued member of the Moriah Lodge No. 15, A. F. & A. M. of Danielson. His wife and one son survive him.

Worthen D. Whittaker, a well known resident of Keene, N. H., for fifty years, died recently at the age of 74 years. Mr. Whittaker was for many years a wool sorter at the Faulkner & Colony Manufacturing Co. at Keene. Three brothers and two sisters survive him.

Henry Schnakenberg, treasurer of the Duplan Silk Co., West New York, N. J., and Hazleton, Pa., also a member of the firm of Cozzens, Elbers & Prankard, silk merchants of New York City, died at his home in Brooklyn, N. Y., January 18, of a complication of diseases. He was 71 years of age and leaves a son and one daughter.

John H. Gormley, Sr., superintendent of the Akela Mill, Pascoag, R. I., died at his home at the age of 56 years. Mr. Gormley was widely known among the woolen mill men of Rhode Island. He was a number of years superintendent of the Manton Mill, American Woolen Co., and the C. L. Blanding Company of Providence, R. I. He was born in Greenville, R. I. Mr. Gormley was a member of the Woolen and Worsted Overseers' Association and his many friends will grieve to learn of his death. His wife and one son survive him.

Herbert Nicholas Fenner, for many years prominent in business and social circles in Rhode Island, died on January 5th at his home in Providence in his 72nd year. He was taken with a chill at his office on New Year's day, and went to his home, where he was found to have the grip. On Saturday his illness developed into pneumonia. Mr. Fenner was born in Providence on March 13,

1843, the son of Nicholas Arnold and Deborah (Brown) Fenner. He married Emma Frances Brayton, daughter of the late Lodowick Brayton, by whom he is survived. One son, Herbert Lodowick Fenner, also survives him. He obtained his early education in this city, and after a few years experience in business succeeded his father in the New England Butt Company. He served as treasurer of that concern for many years, and at the time of his death was president. He was also a director in the Industrial Trust Company and the Joslin Manufacturing Company. Mr. Fenner took a great interest in public affairs, but never held political office. He was prominent in club life, being one of the founders and first treasurer of the Misquamicut Golf Club of Watch Hill. He was a member of the American Society of Mechanical Engineers, the Agawam Hunt, the Audubon Society of Rhode Island, the Providence Chamber of Commerce, the Hope Club, the Providence Art Club, the Rhode Island Country Club, the Rhode Island Historical Society, the Rhode Island School of Design, the Squantum Association, the Turks Head Club, and a director of the Puritan Life Insurance Company.

Robert Ives Gammell died at his home in Providence, R. I. He was born Dec. 30, 1852, and was a member of the firm of Goddard Bros., and Brown & Ives, cotton manufacturers. He was a director of many corporations. Mr. Gammell was president of the Providence National Bank and treasurer of the Lonsdale Co. and the Blackstone Manufacturing Co. He was an independent Republican and active in the affairs of the Episcopal Church. He was a member of the Agawam Hunt, Hope and Squantum Clubs and had been since early manhood identified with the business and financial life of the state of Rhode Island.

John F. Adams, Ex-Mayor of Pawtucket, R. I., and for whom Adamsdale, Mass., received its name, died at his home in Pawtucket at the age of 79 years. Mr. Adams was in the cotton manufacturing business for a number of years, the firm name being Adams & Randall. In 1864 they purchased the Lansville Manufacturing Co. of Lansville, Mass. The name was afterwards changed to Adamsdale. He succeeded his father several years ago as president and agent of the Stafford Manufacturing Co. of Central Falls, R. I. Mr. Adams was a member of the Pawtucket Business Men's Association, Rhode Island Historical Society and a thirty-third degree Mason. His wife, three sons and one daughter survive him.

Alfred Harvey, a pioneer of the silk industry and founder of the Sauquoit Silk Mill of South Scranton, Pa., died at his home in Green Ridge, Pa. He was in his sixty-sixth year and had been ill but a few days, the cause of his death being heart trouble. Mr. Harvey was born in Ashford, Conn., Oct. 10, 1848. He is survived by three daughters, his wife having died a few years ago.

Thomas Morgan Turner of the firm of J. Spencer, Turner & Company, manufacturers and dealers in cotton duck, died at his home in New York City in his fifty-ninth year. Mr. Turner organized the International Cotton Duck Co., and was president of the Consolidated Cotton Duck Co. He was also a director of a number of large cotton mills. Mr. Turner was a member of several Yacht Clubs, also the Merrill and Republican Clubs. His wife and three sons survive him.

Perley H. Gower, who has been employed for the Rochdale Mill, American Woolen Co., Rochdale, Mass., for some time, died January 13. Before going to Rochdale he was for a number of years with the Chapinville Woolen Mill at Northboro, Mass., in charge of dressing and previously worked in several mills in Maine. He was 34 years of age and is survived by his wife and children.

William H. Marble, president of The J. R. Keim & Co., owners of the Shackamaxon Worsted Co., Philadelphia, Pa., also buyer for this company, died at his home in Philadelphia, January 12, of kidney trouble. He was born in Milford, Del., in 1845. He was affiliated with Masonic bodies in his home city, also a member of the Chelsea Protective Association. His wife and two children survive him.

James Gardner, 74 years of age and overseer for several years at the U. S. Finishing Co., Greenville, Conn., died at his home in that city after several weeks of illness from heart disease. He was born in Lisbourn, Ireland, and had been in this country for about thirty-one years. He is survived by his wife and three brothers.

J. H. Crossingham, president and treasurer of the Germantown Knitting Mill, Inc., Germantown, Philadelphia, Pa., died suddenly in the mill office. He was born in London, England, in 1856. In 1870 he came to America and lived in Cohoes, N. Y., for about 7 years, where he engaged in the textile industry. In 1877 he came to Germantown and in 1894 he started in the knitting business on Mechanic St. Mr. Crossingham was active in the First Baptist Church and held high positions in the Masonic fraternity, having been Master of Mitchell Lodge, High Priest and Treasurer of Germantown Chapter and Commander of the Germantown Commandery, Knights Templar. He was also president of the Raymond Building & Loan Association.

Henry Anson Bates, vice-president of the Summit Thread Co., East Hampton, Conn., and a well known resident of Middletown, Conn., died at his home in that city at the age of 68 years. Besides his wife, he leaves four sons and two daughters.

Andrew J. Tinker died at his home in Jewett City, Conn., at the age of 67 years. Mr. Tinker formerly held the position of overseer of carding at the Renfrew Manufacturing Co., Adams, Mass., but resigned his position with that company several years ago to accept a similar one at Jewett City.

Isaac H. Gibbs, overseer of the mule spinning department, Hathaway Mill, New Bedford, Mass., died at his home in that city after a few days illness of pneumonia. He was 44 years of age and was born in England.

New Publications

Any work noticed under this heading can be obtained, postage or express charges free, by sending the price listed to Lord & Nagle Company, 144 Congress St., Boston, Mass. A catalogue of textile books in the English language will be sent free on application.

Clark's Directory of Southern Cotton Mills; Clark Publishing Company, Charlotte, N. C. Price $1.00.

The seventh edition of this useful publication devoted to Southern cotton mills has been received. It gives data covering the officers, products and equipment. The book is well arranged and carefully indexed, and gives evidence of the usual painstaking preparation.

Heaton's Annual—the Commercial Handbook of Canada; 442 pages, 4 1/2 by 7; Heaton's Agency, Toronto, Canada. Price $1.00.

This is the eleventh edition of Heaton's well known annual which has been carefully revised to bring the information up to date. It includes a list of government officials, members of Parliament, insurance companies, banks, railways, steamships, postal, parcel post and cable rates, registry offices, commercial regulations, cost of travel, customs tariff, etc. There is a digest of the customs laws and regulations of the Dominion, also a list with brief sketches of the important towns of Canada, including the leading hotels, existing industries and industrial opportunities. A section is devoted to agriculture, commerce, education, finance, fisheries, forests, fox-farming, immigration, mining, population, railways, game laws, water powers, etc. Under the head of "Where to Find It" are arranged in alphabetical order, various subjects of importance to business men, giving reference to sources of information. The volume is a condensed encyclopedia of Canadian resources.

Export Trade Directory, 1915 Edition; by the American Exporter, 17 Battery Pl., New York City. Price $3.00.

This up-to-date directory is of special interest to the textile trade at the present time in view of prospective orders for wearing apparel, cloth, knit goods, etc., for export. This volume contains a vast amount of information valuable to the manufacturer who wishes to know the facilities for shipping and financing his foreign orders. This directory lists 73 large banking houses dealing in foreign exchange as a specialty. One hundred eight offices (buying agency) in the City of New York are foreign concerns or merchants. In addition there are no less than 605 export commission houses listed doing business with all parts of the world. The directory gives the countries with which each of these houses does business and the kind of commodities in which it deals. They are cross indexed and classified in three different ways. There is a list of the steamship lines in foreign service sailing from various American ports, no less than 94 being listed as flying from the Port of New York to all parts of the world. Export houses and steamship lines are also listed in other cities of the United States.

BUSINESS LITERATURE

American Pulleys, Data Sheets; The American Pulley Co., Philadelphia, Pa.

An illustrated booklet describing and illustrating the pulleys built by the American Pulley Co Each part of the pulley, the hub sheel, spiders, rims, crown and groove in the face are explained and illustrated. The American pulleys are made of interchangeable parts. All pulleys above 24 inches are carefully balanced before shipment. Each American pulley, upon completion, is carefully inspected when revolving on a bearing, for roundness and truth to the plane of rotation. The permitted deviations from perfect accuracy are fixed by rule, and no pulley is passed which does not come within the required limits.

Centrifugal Pumps; DeLabel Steam Turbine Co., Trenton, N. J.

The DeLabel Steam Turbine Co. has issued a three hundred page book with illustrations, describing centrifugal pumps for motor and steam turbine drives.

The Yellow Peril; The United States Gutta Percha Paint Co., Providence, R. I.

This is the title of a striking booklet recently published by the United States Gutta Percha Paint Co., manufacturers of Rice's Mill White. The name is suggested by the tendency of many white paints to yellow with age and the booklet points out tests that have been made showing the superiority of Rice's Gloss Mill White, which does not turn white nor chip off.

Lowinson's Comparative Cotton Goods Chart for 1914; Louis Lowinson, 72 Leonard St., New York.

This is a chart, 18 by 23 inches, showing the fluctuations during the year in the prices for middling uplands cotton and for seven standard grades of cotton goods. Two colors are used in printing the quotations so as to show at a glance any reversal in the movement of prices, whether upward or downward. The chart is adapted for wall use and will be found very useful for reference.

CALENDARS

We have received two calendars from the Curtis & Marble Machine Co., Worcester, Mass., one of which is designed for use in cotton mills and the other for woolen and worsted mills. The calendars are of excellent design; the difference between the two consists in the display of the machinery built by the Curtis & Marble Machine Co. The monthly sheets of the cotton mill calendar shows two types of cloth inspecting machines, the railway sewing and rolling machine, cotton shear, cotton brushing and rolling machine, the Heath patent vertical brushing machine with calender rolling machine, steam calender rolling machine,

spreader roll, cloth folding machine, gas singeing machine, float thread shearing machine, cloth winder and measurer.

The calendar for woolen and worsted mills shows a single and double cutter woolen shear, doubling and tacking machine, rag and shoddy picker, cloth spreading and rolling machine, "Atlas" mixing picker, double-acting brushing machine, Fearnaught picker with self feed, sanding and polishing machine, Parkhurst double cylinder burr picker, dewing and spraying machine, Gessner rotary cloth press.

Acme Knitting Machine & Needle Co., Franklin, N. H., have a very attractive panel calendar in dainty colors. The picture is entitled "In the Merry Month of May," and is a beautiful representation of an apple tree in full bloom in a country landscape.

Birch Brothers, Somerville Machine Works, Somerville, Mass., issue their annual calendar in an attractive form this year. The picture represents two attractive women at the piano, suggested by the verse of Longfellow's poem, "Sing Me a Song of the Olden Days".

The Saco-Lowell Shops have sent out a calendar tablet arranged so that each sheet is given a week with space for noting engagements. This is a very convenient arrangement for calling up future engagements.

The annual calendar sent out by the National Silk Dyeing Co., Paterson, N. J., to their customers and friends combines the qualities of usefulness and attractiveness. Besides the small monthly date sheets it is ornamented with a beautiful picture entitled, "The Path Through the Woods", which is a hand painted water color taken from the original painting by Edwin Lamasure.

John F. Street & Co., Providence, R. I., have sent out their usual memorandum book to their customers, containing calendars for 1915 and 1916, valuable yarn tables and other information of value to business men.

The Universal Winding Co., Boston, Mass., has issued a handsome wall calendar with large daily pad. It is made of enamelled metal and is surmounted by a picture of their large new works near Providence.

The Stafford Co., builders of automatic looms, Readville, Mass., have sent out a unique desk calendar in the shape of a brass panel stand upon which is stamped in two colors a representation of the Stafford loom. The stamping is done by special dies and the whole scheme is carried out with good taste and with striking effectiveness.

Birch-Arlington Machine Works, Arlington Heights, Mass., issue a calendar printed in duotone. The picture represents a family scene, a mother and two children, and is entitled "Come to Bruvver".

"Moonlight Reveries" is the subject of a beautiful calendar issued by Speed & Stephenson, worsted machinery and supplies, 170 Summer St., Boston, Mass. It represents a young girl seated in the balcony in the moonlight looking out over the water. It makes a very attractive wall decoration.

Industrial Notes

MOVED INTO LARGER PLANT

Oswald Lever Co., of Philadelphia, builders of textile machinery, who make a specialty of winding machinery, has moved its plant from the old quarters on Lehigh Ave., which they had occupied for many years, to Thirteenth and Cumberland Sts., where they occupy a large building giving them over double the amount of floor space Their shipping facilities are also improved, as the new plant is on the main line of the Philadelphia and Reading Railroad. This change was made necessary by their growing business and with new facilities they will be able to meet their customers' requirements more expeditiously than ever.

ATKINSON, HASERICK & CO.

E. W. Atkinson of Boston is senior partner of the firm of Atkinson, Haserick & Co., succeeding Richards, Atkinson & Haserick, which was in its turn the successor to a long established business as textile machinery and cotton importers at 150 Congress St., Boston, Mass. Arthur A. Haserick, who was for a long time at the Boston office, has taken charge of the English office at Bradford since the death of the late Mr. Richards and will remain abroad. John L. Coon, who has had charge of the cotton department for some time, has been admitted as a partner.

CLOTH STRENGTH TESTERS

The increasing demand for goods made under government specification, both foreign and domestic, has resulted in many calls for a cloth strength tester that would enable manufacturers to know whether their goods conform with the government strength tests. Henry L. Scott & Co., 223 Eddy St., Providence, R. I., announce that they are prepared to make immediate deliveries from stock of their Government type, hand cloth testers. Similar testers are in use in the United States departments so that the manufacturers may know their goods are tested under similar conditions.

S. L. Lanpher has accepted a position as overseer of spinning at the Locustville Woolen Co., Hope Valley, R. I. He was formerly employed at the American Felt Co., Hyde Park, Mass.

E. P. Dickinson has taken a position with James & E. H. Wilson, Taconic Mill, Pittsfield, Mass., to look after their dyeing on the night shift.

J. F. Loomis has accepted the position as second hand of carding at the National Woolen Co., Cleveland, O.

NEW LOWELL TEXTILE TRUSTEES

At the annual meeting of the trustees of the Lowell Textile School, the following officers were re-elected: Alexander G. Cumnock, president; James T. Smith, clerk; Arthur G. Pollard, treasurer. Hon. John Jacob Rogers, of Lowell, was elected vice-president to succeed his father, the late Jacob Rogers. Five new permanent trustees were elected to the board, as follows: Franklin W. Hobbs, president of the Arlington Mills, Lawrence, Mass.; William A. Mitchell, agent of the Massachusetts Cotton Mills, Lowell, Mass.; Everett H. Walker, agent of the Lawrence Mfg. Co., Lowell; Royal P. White, superintendent of the Stirling Mills, Lowell, and T. Ellis Randall, agent of the Monument Mills, Housatonic, Mass. Franklin Nourse, formerly identified with Lowell's textile industry, has resigned from the board of trustees.

AMERICAN COTTON MANUFACTURERS MEETING

The annual meeting of the American Cotton Manufacturers Association is announced to be held on Tuesday and Wednesday, April 13th and 14th, at Memphis, Tenn., with headquarters at the Hotel Chisca. It is understood that Memphis is making elaborate plans for the entertainment of the manufacturers. This is the first time Memphis has been chosen as the meeting place and they wish to make it a memorable occasion.

DIAMINE FAST BROWN G F PATENTED

This is a new dyestuff brought out by Cassella Color Company and fully described in Supplement No. 9 to their well known volume on Cotton Dyeing. The color is shown on raw cotton, cotton yarn and piece goods and judging from its properties as described it should no doubt prove of considerable interest to dyers of cotton who require a color to form the basis of terra cotta and similar shades.

This series of supplements appears to be of general interest to cotton dyers and all such who might not now be in regular receipt of them should have their names on the Cassella Color Company mailing list for all future issues.

NEW TRADE TERMS IN USE IN ENGLAND

Consul Albert Halstead, Birmingham

The use of the phrases "German silver" and "German steel" has been stopped in England since the war, and "nickel silver" and "nickel steel" are the descriptive terms used. It seems advisable that this point should be noted by American manufacturers exporting to the United Kingdom articles made of such metals.

George E. Bidwell has accepted the position as overseer of finishing at the Ardmore Mill, Yantic, Conn. He was formerly employed at the Devonshire Mill, Goff's Falls, N. H.

NEW COMPANY ORGANIZED TO SELL DODGE PRODUCTS

For the purpose of securing better efficiency and better service, the Dodge Sales and Engineering Company has been organized and incorporated to distribute all the products of the Dodge Manufacturing Co. in the United States and abroad, together with engineering connected with sales. The Dodge Sales and Engineering Co. takes over the present sales and engineering departments of the Dodge Manufacturing Company, warehouses, and branch sales and engineering stations at Chicago, Minneapolis, St. Louis, Atlanta, Cincinnati, Pittsburgh, Philadelphia, Boston, New York, Dallas and Indianapolis. The Link Belt and Dodge Products Company will handle all sales and engineering from Seattle and Portland, Ore. Under the new arrangement the Dodge Manufacturing Co. expects to devote its entire time and energy to the manufacture of power transmission machinery and appliances, elevating and conveying equipment, water softeners, etc., and to the design and production of other lines kindred thereto.

Duncan J. Campbell, for many years general sales manager of the old company, goes to the new corporation as vice-president and general manager, taking with him the general sales department at Mishawaka, and the entire branch house organization. For the present, at least, there will be no changes. C. R. Trowbridge, who has been associated with Mr. Campbell for a number of years, continues in charge of advertising and sales promotion, with offices in the Mishawaka Trust Bldg., Mishawaka, Ind.

While there has been some talk of moving the general offices to Chicago, for the present, at least, they will remain at Mishawaka, which has been the home of the Dodge Manufacturing Company for thirty-one years.

Link Belt and Dodge Products Company was incorporated in October under the laws of the State of Washington.

Link Belt Company of Chicago, and Dodge Manufacturing Co. have for some time been parties to a reciprocal purchase of products used in large installations of elevating, conveying and power transmission equipments. The Link Belt people have maintained a branch at Seattle and Dodge Manufacturing Company at Portland.

Both Dodge and Link Belt will abandon their branches at Seattle and Portland; the new corporation having its main offices in Seattle with an extensive branch at Portland. Full stocks of the products of both concerns will be carried at each point, and in all probabilities at Juneau, Alaska.

STARCHES AND SOFTENERS

The Arabol Mfg. Co., 100 William St., New York, are among the largest manufacturers of starches, sizing compounds, softening oils, softeners and similar articles for all branches of textile manufacture. They are well equipped by modern machinery, laboratory and experience to give satisfactory service to manufacturers. They make it their specialty to meet any particular condition of textile manufacturing.

JAMES TAYLOR RETIRING

James Taylor, who has long been engaged in business as a dealer in second-hand knitting machinery, has retired from this business and his stock of machinery has been sold out. Mr. Taylor is now engaged in the automobile business, operating a large garage.

SOUTHERN NEW ENGLAND TEXTILE CLUB

Over two hundred members and guests were present at the monthly meeting of this club held at the Narragansett Hotel, Providence, R. I., on January 16. President Albert Green Duncan, of the National Association of Cotton Manufacturers, was the principal speaker. In introducing Mr. Duncan, President Dexter referred to the National Association of Cotton Manufacturers as being the oldest association and largest in membership and said: "We think ordinarily that our organization 'is some pumpkins', but we have to acknowledge a superior in the National Association, whose president, Mr. Duncan, I now take pleasure in introducing to you."

Mr. Duncan was very cordially received by the audience, who rose to greet him. His address is in part as follows:

"Ever since the outbreak of the European war we have heard a great deal about the marvelous possibilities awaiting America in the export trade. I myself was guilty early in the game of one of these efforts. The turning of our minds toward this subject has been natural, as American business men, finding their own markets slipping from them owing to the business disorganization, have turned their attention to other outlets. It is very easy to give advice, and consequently we have been flooded with a mass of information or misinformation emanating from newspaper writers, politicians and, in fact, from everyone whose business has not been primarily connected with the export trade. From exporters we have heard very little, naturally, because they understand the subject, and their whole minds are turned toward keeping the business they have formerly done, rather than educating their fellow citizens along the lines of future development.

"We have been told of the marvelous possibilities for American products, and particularly cotton goods, in South America and other countries of the world where we have hitherto done little trading. And this has been featured primarily because of the reason that Germany, which has had the most wonderful development in the export business in the last fifteen years of her existence, has been removed as a competitor. Wars and political upheavals may accomplish many things. They do not, however, change human nature, nor do they upset fundamental and basic industrial conditions which have been the outgrowth of generations and are as firmly fixed as the habits of race and speech, which differentiate one nation from another.

"We have got to look this situation fairly in the face. Manufacturers in this country must expect to pay a rate of wages largely in excess of their competitors' in the same line in other nations. And, far from calling this a disadvantage, it behooves us to see how we have already to a marked degree profited by it and how we may continue so to do in the future.

"It seems as if a good deal of the talk of export trading which has been promulgated within the last few months has not taken account of these facts, and we as manufacturers have been told to study the needs of foreign markets and adopt the selling and standardizing methods of our competitors; in other words, to be mere copyists of our competitors, when our whole industrial structure has been built up on another theory.

"Take the trade of cotton piece goods. American manufacturers have for many years been held up to reproach because they were unwilling or unable to meet foreign competition in South America and elsewhere by a very minute subdivision of their shipments, and we were called unprogressive because we declined to mix in the same case half a dozen widely different fabrics to meet the need of some local market. Taking into account the difference in our method of manufacture, the reason is perfectly plain. American manufacturers make cotton goods by the mile; their foreign competitors make them by the piece. The latter take orders and then assemble the goods. The American cotton manufacturer builds his mill to produce a certain line of fabrics at the lowest possible cost and then seeks to push them in large quantities into new markets.

"I learned the other day, through one qualified to speak on this subject, the difference in the way an English and an American print works is run. The product of an English print works is about 25,000 yards per week per machine. The product of an American printing machine is about 75,000 yards in the same period and on the same class of goods. And with this low rate of production and with a low labor cost it is comparatively easy for the Englishman to stop his machine and run off any number of small orders to fill the wants of various markets. Whereas, with the high cost with which the American manufacturer has to contend, the only way he can live is to run his machine at the top rate of production and turn out the same pattern in large quantities.

"How does this apply, you will ask, to the export trade? If we should attempt to reduce the product of our mills by great diversification of fabrics to the English standard we should find our cost prohibitive. The alternative, therefore, seems to be evident. We must go for export markets in the same spirit and with the same methods that have enabled us to increase and hold our domestic markets. We must teach foreigners to buy American goods because they are American; because they are made in the American way; because we believe that in the long run they are better for the purpose intended, that they are produced in greater quantities, and that purchasers have the advantage of a wider and more stable market than if they restricted themselves to the goods made on special order."

The February meeting of this club will be held at the Narragansett Hotel, Providence, on February 27. The speaker on this occasion will be Hon. Curtis Guild, who takes as his subject "The Commercial Relations Between Russia and the United States".

LOWELL TEXTILE SCHOOL ALUMNI

Extensive preparations are being made for the 16th annual banquet of the Alumni Association of the Lowell Textile School, which will be held at the Hotel Vendome, Boston, Saturday evening, Feb. 20, 1915.

At a recent meeting in Boston of the Entertainment Committee, comprised of the following: Robert R. Sleeper, '00, Chairman; Royal P. White, '04, and George L. Gahm, '06, arrangements were completed which will undoubtedly make this event the most successful of any held by the Association.

Gratifying assurances have already been received from members residing at a distance that they are looking forward to the event with great enthusiasm.

The usual notice will be mailed to members in the near future. Any failing to receive such will please communicate with the secretary of the association.

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THE NEW BEDFORD TEXTILE SCHOOL

The annual meeting of the corporation of "The Trustees of the New Bedford Textile School" was held Monday evening, Jan. 4, 1915. The following officers were chosen for the ensuing year: President, William E. Hatch; Treasurer, Frederic Taber; Clerk, James O. Thompson, Jr.

The resignation of John Halliwell was received and accepted. Samuel F. Winsper, Supt. of the City Mfg. Corp., was elected to fill the vacancy.

It was voted to ask the city of New Bedford for the usual appropriation of $10,000 for maintenance and operation of the school for the ensuing year. The trustees had already asked an appropriation of $27,000 from the State for the same purposes. No special appropriation will be asked of the State.

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"MADE IN U. S. A." EXPOSITION

The "Made in U. S. A." idea will have concrete expression at the exposition to be held at the new Grand Central Palace, Lexington Ave. and Forty-Sixth St., New York City, from March 6th to March 16th.

This exposition is intended to be national in its scope and will cover all lines of industry and trade. These dates have been selected to show American products in New York at a time when the city will be visited by thousands of buyers from all sections of the country. Furthermore, special efforts are now being made to bring foreign buyers to the city at this time. Many representatives are already here and more are expected as the belligerent and neutral nations turn to the United States to supply their urgent needs.

The personal direction is in the hands of Harry A. Cochran, who has had great experience as an organizer and manager of industrial expositions, and from the encouragement that he has so far received it seems probable that this exposition will be a very successful auxiliary to the "Made in U. S. A." movement.

"TECHNICAL JOURNALS INDISPENSABLE"

Keen interest was shown by a large audience at the first session of the Technical, Trade and Class Journal Division of the Pilgrim Publicity Association at its rooms in Boston. The speakers were Charles G. Phillips, Vice-President of the United Publishers Corporation, New York; Walter B. Snow, Publicity Engineer, Boston, and George A. Heintzmann of the Heintzmann Press, Boston.

Describing "The Building up of a Trade Paper," Mr. Phillips traced the rapid growth of the trade paper idea since he entered the field in 1887, and pictured the essential requirements of a good paper. Emphasis was laid upon the absolute necessity of intimate knowledge of the field by everyone concerned—editors, advertising managers, solicitors and all—knowledge that is embracing—not limited to any particular aspect of the business. Only thus may the journal become a specific and vital help to every subscriber.

Mr. Phillips, as is generally known, is an enthusiastic believer in the advertising service department idea, but equally enthusiastic in his belief that each advertiser should pay the paper for what it gets in the way of service, for as he said, "Men appreciate what they pay for."

Referring particularly to the criticism of special issues, he showed that in certain fields such as dry goods and boots and shoes seasonal treatment of certain aspects of the business are abolutely necessary and that this treatment should be applied through both the editorial and advertising columns. Such special issues become markers for the trade and of the greatest value in directing plans and purchases.

Mr. Phillips related recent experiences with leading advertising agencies which proclaimed the previous lack of appreciation of each other's purposes and knowledge, and emphasized the untouched opportunities for helpful cooperation. As he said, few general advertising agents fully realize the wealth of expert knowledge which trade paper publications possess regarding their particular fields and how essential it is that advertising campaigns be grounded on such knowledge; in a word the trade paper should form the basis of any general advertising campaign.

In his discussion of "The Value of Technical and Trade Journal Advertising" Mr. Snow referred to the inevitable interlocking and over-lapping of class, trade and technical journals, but showed that all such mediums are automatically selective in their readers and their advertisers. It was made manifest that only the periodical that publishes good staff or contributed matter and pays a good price for it can expect the appreciation of its readers and the confidence of its advertisers.

Addressing the prospective advertiser or advertising agent, who through his intimacy with so-called national mediums has been acsustomed to thinking of circulations in terms of hundred thousands or millions, it was shown why he should respect the technical journal circulation of five to ten thousand, and realize its refined value, and furthermore, why the advertising agent should not measure the advertising value of technical and similar journals by their space rates as compared with

those of national publications, but rather should consider the vastness of the market which the former represent and then appreciate how low their rates really are.

It was pointed out that the first class technical journal occupies an exceedingly high place in the field of periodical literature. That there are second and lower grade periodicals in each of the technical groups is true enough, but it is very easy to pick the one, two or, at the utmost, three publications that completely outclass the rest.

Mr. Snow made clear that the opinion of several persons is usually concerned in the purchase of any important piece of machinery, and that so far as the actual signing of orders is concerned it may without unjust criticism be said that the best readers of the technical journals are not necessarily the best buyers. But to the technical journal the responsible executive of today must acknowledge that he owes much credit for his advancement, for it is almost a foregone conclusion that he must have been a thorough reader in his younger days—when he had the time.

The technical journal becomes in many lines a veritable cyclopedia of material, equipment, machinery, supplies, etc., required for the manufacturer, the engineer or the contractor. It numbers its advertisers by the hundred and its carefully prepared index serves as the key to open communication between seller and buyer. In a word the technical journal is indispensable.

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SODA ASH AND CAUSTIC SODA

Many manufacturers think there is no difference in the different brands now on the market, but a manufacturer who insists upon getting a Soda Ash which tests over 99 per cent. pure sodium carbonate (Na_2CO_3) and no bicarbonate of soda can rest assured he will experience no trouble in scouring wool, etc. Being a very pure article in that it contains less than 1 per cent. of impurities and very readily dissolves.

Ellis Jackson & Co., 18 No. Front St., Philadelphia, Pa., carry these high test grades of Soda Ash and Caustic Soda. They also direct attention to their high test 76 per cent. caustic soda, which is guaranteed to test over 78 1/2 per cent. N. Y. & Liverpool test and is used by some of the largest manufacturers. This is carried in stock both in the fused form in drums and powdered in hardwood barrels. A large stock of caustic soda, soda ash, bleaching powder, borax, caustic potash and bicarbonate of soda is carried so that prompt shipments are made. Carload lots are shipped direct from the works.

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REMOVAL NOTICE

Read Holliday & Sons, Ltd., have removed their New York office from 11 Gold St. to 160 Franklin St.

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The business conducted under the trade name of Reliance Machine Works, builders of textile dyeing and finishing machinery, Hedge and Plum Sts., Frankford, Philadelphia, Pa., has been incorporated under the laws of the State of Pennsylvania.

WILL DEVELOP IMPROVEMENTS

Thomas Leyland & Co., 60 India St., Boston, Mass., with works at Readville, invite correspondence from anyone who may have an idea for textile machinery improvements which may be developed and patented. They manufacture a variety of machines for the finishing department of cotton and woolen mills and bleacheries.

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NEW ENGLAND AGENT

The Champlain Silk Mills have appointed J. E. Cheesman in charge of their New England office in the Industrial Trust Bldg., Providence, R. I., to take the place of George C. Hinckley, who has resigned.

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ANTHRACENE CHROME BLUE R W N PATENTED

We are in receipt of a copy of Supplement No. 57, which shows a series of four valuable shades of bright, dark blue on worsted cloth obtained by using Anthracene Chrome Blue R W N Patented, in combination with either the chrome mordant, after chrome or anthracene chromate process for dyeing.

The new dyestuff seems to be particularly fast to light, milling, alkalies, decatizing and sulphuring and in consequence is useful for the dyeing of a wide line of fabrics that are intended for severe wear.

The Supplement contains the details of several practical dyeing processes adapted to this color and a copy should be in the hands of every working piece goods dyer, and no doubt the Cassella Color Company, at any of its branches, will comply with requests for the same.

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North Carolina, Asheville. It is reported the French Broad Mfg. Company will postpone the building of the projected spinning mill for the present, but will build a warehouse 100 feet square in which some waste machinery will be installed.

North Carolina, Bessemer City. The Gambrill & Melville Mills, of Havre de Grace, Md., have purchased the old Sanders Spinning Company's mill. Recently the Harborough Mill here was purchased by them. The two local mills give them about 15,000 spindles and 400 looms here, with dyeing and finishing departments. New machinery has been ordered and the properties are being fitted up and put in first-class condition. Just what kind of looms they are going to run, or what they will make, or who will have charge, they are not ready to report, as they have not definitely arranged these matters themselves. Tatum, Pinkham & Greey, N. Y., who sell the goods for the Havre de Grace Mills, will also sell the product of the Bessemer plants. It is hoped that the Bessemer mills can be started up in March.

North Carolina, Caroleen. The Henrietta Mills No. 2, a branch of the plant at Henrietta, is to be equipped with a large number of new automatic looms.

BUSINESS LIBRARY EXPERT

Guy E. Marion, who has been for the last five years in charge of the Information Department of Arthur D. Little, Inc., has recently engaged in business on his own account in the capacity of library adviser for large industrial plants who may have or who may wish to install special libraries bearing upon their industry. The Arthur D. Little information department, of which Mr. Marion had charge, consisted not only of a technical library of several thousand volumes, but also a clipping file of large proportion, carefully indexed, on all trade subjects having bearing upon their business. Many hundred pamphlets and catalogues as well as the equipment and facilities for carrying on much of the publicity work of the business. Prior to his association with Mr. Little's organization Mr. Marion was with the American Brass Co., Waterbury, Conn., in charge of their information department. He is secretary and treasurer of the Special Libraries Association as well as a member of other business organizations. His offices are at 1101 Tremont Bldg., Boston, Mass.

PROVIDENCE OFFICE REMOVAL

H. W. Butterworth & Sons Co. have moved their Providence office to Room 1212, Turks Head Bldg., where they have been located since February 1st.

INFRINGEMENT SUIT

The Willcox & Gibbs Sewing Machine Co. advises us that they have brought suit against the Union Special Machine Co. in the United States Circuit Court for the Northern District of New York at Utica, N. Y., for alleged infringement of patents Nos. 1,041,574, 1,041,585 and 1,041,658, relating to the Flatlock machine for seaming knit goods.

CARBAZOL WOOL GREEN S PATENTED

This is a product of interest to woolen and worsted dyers on account of fastness to washing, and particularly so towards alkalies, sulphuring, carbonizing and decatizing. In dyeing fabrics containing cotton effect threads the latter remain unstained. Carbazol Wool Green S may be used freely with other acid dyeing colors for producing compound shades. This new color is fully described and illustrated with practical dyeings accompanied with working formula, a copy of which may be obtained from any of the offices of the Cassella Color Company.

REMOVAL

Read Holliday & Sons, Ltd., importers and dealers in aniline colors, dyestuffs and chemicals, are now located at 160 Franklin St., New York City.

North Carolina, Fayetteville. The Cape Fear Cotton Mills have purchased new spinning frames, twisters and spoolers.

COTTON PRICES IN GERMANY

Cablegram from American Ambassador, Berlin, Jan. 25

Bremen cotton prices during past week averaged 78 pfennigs net cash per half kilo (16.88 cents per pound) good middling. Hamburg, 76 pfennigs (16.44 cents per pound) spot cotton; Hamburg February deliveries, about 70 pfennigs (15.15 cents per pound).

FOREIGN TRADE OPPORTUNITIES

The Bureau of Foreign and Domestic Commerce has published the following items regarding opportunities for foreign business in textile materials. Reserved addresses may be obtained from the Bureau and its branch offices. Request for each opportunity should be on a separate sheet and the file number given.

Sewing thread, No. 15328: An American consular officer in the Far East has transmitted a report relative to a market in his district for American sewing thread. The name and address of a firm which desires to secure an American agency for that country, together with a copy of the complete report, may be had on application to the Bureau of Foreign and Domestic Commerce and its branch offices.

Gloves, hosiery, etc., No. 15329: A firm of glove merchants in the United Kingdom has informed an American consul that it wishes to represent American manufacturers of gloves, hosiery, and other kindred lines. It is stated that the firm has been importing these commodities from Europe.

Handmade silk, linen and thread laces, etc., No. 15330: A firm in the Far East has forwarded, through an American consular officer, a number of catalogues, price lists, and general literature relative to handmade silk, linen and thread laces, ponge silks, and hair nets. American firms interested in the importation of these commodities may consult these publications at the Bureau of Foreign and Domestic Commerce at its branch offices.

Machines, cloth-cutting, No. 15338: An American consular officer in Spain reports that a business man in his district wishes to communicate with American manufacturers of cloth-cutting machines which may be operated by electricity. Prices, catalogues and terms should be sent at once. Correspondence, etc., should be in Spanish.

Piece goods, No. 15414: A broker, who is said to be conversant with the import and export trade of East Africa, has informed an American consular officer that he desires to enter into business relations with an American firm with a view to receiving consignments of various lines of piece goods to be disposed of on a commission basis. It is explained that he has had experience in the cotton-goods trade, and is prepared to submit samples of the various lines of piece goods and to explain the needs and methods of the markets of East

Africa. Correspondence may be in English. Interested firm will be supplied with bank references upon application to the broker.

Knitted goods, No. 15410: An American consular officer in the United Kingdom reports that a commission agent in his district would like to be put in touch with American manufacturers of, or dealers in, all kinds of knitted goods, particularly the following: Knitted coverings, gloves, vests for men, half hose, etc. Samples, prices in English currency, etc., should be sent at once. It is explained that delivery should be made within two or three months, if possible. An exclusive agency is desired.

Cotton and woolen goods, and machinery, No. 15430: An American consular officer in Europe reports that a commission merchant in his district is desirous of obtaining an agency for American manufacturers of cotton and woolen goods. He also desires to represent manufacturers of machinery for making cotton and woolen goods.

Thread and yarn of all kinds, manila cord and rope, No. 15439: An American consular officer in southern Europe has reported that a business man in his district desires to communicate with American manufacturers of thread and yarn of all kinds for sewing and other machines. He also wishes manila cord and rope for use in connection with agricultural machines. Prices and catalogues are requested to be sent immediately. Correspondence should be in Spanish.

TREASURY DECISIONS

T. D. 35015. Dec. 21, 1914. Jute thread waste. 1. Jute thread waste—Act 1913. Merchandise reported by the appraiser as jute thread waste composed of the short ends of new, unused jute thread, and otherwise shown by the testimony of the importers to be the warp ends, mill waste, or offals of machinery resulting in the manufacture of jute bagging or cloth, and which is also shown to be suitable for paper making, held to be free of duty under paragraph 408, tariff act of 1913, as waste of one of the articles therein described suitable for the manufacture of paper. 2. The word "suitable" defined. The word "suitable" in the tariff law means actually, practically, and commercially fit. In the matter of protect 746283 of Thos. Crompton & Son against the assessment of duty by the collector of customs at the port of Philadelphia.

T. D. 35019. Dec. 26, 1914. Turkish towels, being more specifically provided for as "towels . . . made of cotton" than as "manufactures or articles . . . made or cut from . . . pile fabrics," are dutiable at 25 per cent. ad valorem under paragraph 264, act of 1913, and not at 40 per cent. ad valorem under paragraph 257. In the matter of protests 759664, etc., of Geo. Borgfeldt & Co. et al. against the assessment of duty by the collectors of customs at the ports of Los Angeles and Philadelphia.

T. D. 35030. Jan. 4, 1915. Wearing apparel in part of Lever lace. Appeal directed from decision of the Board of United States General Appraisers of December 9, 1914, Abstract 37007 (T. D. 34984), so far as it relates to protest 715163, relative to wearing apparel in part of Lever lace.

T. D. 35035. Jan. 5, 1915. Drawback on linen fabrics. Drawback on imported linen fabrics exported after being water shrunk and refinished by the Rigby Waterproof & Finishing Co., New York, for the account of N. Erlanger, Blumgart & Co., of New York.

T. D. 35047. Jan. 8, 1915. Jacquard figured velvet table covers. Cotton table covers made from figured velvet woven on a loom using a Jacquard attachment are more specifically provided for as "articles . . . made from . . . velvets" than as "Jacquard figured upholstery goods" or as "Jasquard figured manufactures of cotton," and are dutiable at 40 per cent. ad valorem under paragraph 257, act of 1913, and not at 30 or 35 per cent. ad valorem under paragraph 258.

T. D. 35048. Jan. 8, 1915. Appliqued articles. 1. "Blanket" Protests. Protests relating to importations embracing a great variety of articles and failing to describe the particular merchandise against which they are lodged, the protests merely objecting to the rate assessed and then claiming the goods dutiable under one of 13 different provisions of the tariff act of 1913, held not to comply with the requirements of paragraph N of section 3 of said act, that the protest shall set forth therein "distinctly and specifically" the reasons for the importers' objections to the assessment.

2. Trimmings, etc., in chief value of beads—appliqued articles. Garnitures, motifs and trimmings composed of silk or cotton netting, to which beads and spangles of various colors have been applied in forms and designs, and some of which have also been embroidered, are dutiable as appliqued or embroidered articles under paragraph 358, tariff act of 1913, and not as articles in chief value of beads under paragraph 333. In the matter of protests 736770, etc., of F. Ludewig & Co., et al against the assessment of duty by the collector of customs at the port of New York.

T. D. 35063. Jan. 11, 1915. Embroidered cotton handkerchiefs. Embroidered cotton handkerchiefs are properly dutiable at the rate of 60 per cent. ad valorem under the provision in paragraph 358, tariff act of 1913, for "handkerchiefs . . . embroidered in any manner by hand or machinery . . . by whatever name known; . . . of whatever yarns, threads, or filaments composed," rather than under the provision in paragraph 255 of said act for "handkerchiefs . . . composed of cotton, not specially provided for in this section." In the matter of protest 761782 of Morimura Bros. against the assessment of duty by the collector of customs at the port of New York.

T. D. 35081. Jan. 23, 1915. Drawback on clothing. T. D. 34144 of Feb. 4, 1914, extended to cover clothing manufactured by Marks Arnheim, Inc., New York, with the use of important materials.

Recent Textile Patents

BALLOON FABRIC and the Like. 1,118,149. Benjamin D. Forritt, Edinburgh, Scotland.

BOBBIN STRIPPER. 1,121,602. George F. Bahan and Frederick R. Chadwick, Charlotte, N. C.

BRAIDING MACHINE. 1,117,331. Henry Z. Cobb, Winchester, Mass.

BRAIDING MACHINES, Unwinding Mechanism for. 1,117,438. Hans A. Philips, Bridgeport, Conn.

CARDING MACHINE. 1,117,989. Eugene Fievet, Dunkirk, France.

CLOTH CUTTER. 1,122,050. Louis H. Williams, St. Joseph, Mo.

DYEING. 1,121,720. Juan A. Dominguez, Buenos Aires, Argentina.

DYEINGS on Cotton, Producing. 1,123,263. Heinrich Eichwede, Hochst-on-the-Main, Germany.

DYESTUFF, Red Wool. 1,123,430. Willy Tropp, Hoechst-on-the-Main, Germany.

FABRIC COVERING and Making the Same, Woven. 1,123,087. Joseph N. Wiggin, E. Orange, N. J.

FABRIC TREATING Machine. 1,123,427. Archibald B. Tozer, Cleveland, O.

FABRICS, Filler for Textile. 1,117,873. Frederick W. MacKenzie, Washington, D. C.

FABRICS, Lisleing and Dyeing Vegetable. 1,116,397. Alexander N. Dubois, Philadelphia, Pa.

FIBERS, Apparatus for Preparing Cotton. 1,117,567. William H. Harriss, Pawtucket R. I.

FIBROUS MATERIAL, Apparatus for Treating. 1,117,721. William P. Straw, Manchester, N. H.

HOSIERY, Knitted Tubular Pocket for. 1,117,591. Rufus J. Morningstar, Philadelphia, Pa.

KNIT UNDERGARMENT. 1,118,802. Joseph H. Reaney, St. Johnsville, N. Y.

KNITTED WEB, Fleeced. 1,118,062. Robert W. Scott, Boston, Mass.

KNITTED WEB. 1,118,063. Robert W. Scott, Boston, Mass.

KNITTED FABRIC. 1,123,924. Loraine J. Quinn, Utica, N. Y.

KNITTING MACHINE. 1,116,444. Josephus A. Kramer, Terborg, Netherlands.

KNITTING MACHINE, Circular. 1,117,935. Harry H. West, Plymouth, Pa.

KNITTING MACHINE, Circular. 1,121,681. William E. Smith, Milltown, N. J.

KNITTING MACHINE, Circular. 1,122,560. Harry H. West, Plymouth, Pa.

KNITTING MACHINE, Circular. 1,123,779. Kenneth Moller, Providence, R. I.

KNITTING MACHINE, Circular. 1,117,032. Robert W. Gormly, Troy, N. Y.

KNITTING MACHINE Yarn-Changing Device. 1,123,937. Robert W. Scott, Boston, Mass.

KNITTING MACHINE Yarn-Feeding Device. 1,123,076. Harry Swinglehurst, Philadelphia, Pa.

KNITTING MACHINES, Yarn Feeding Mechanism for Circular. 1,118,713. Harry H. West, Plymouth, Pa.

LOOM HARNESS. 1,117,680. James R. Lister, Methuen, Mass.

LOOM SHUTTLE. 1,117,719. Edward S. Stimpson, Hopedale, Mass.

LOOM. 1,117,791. Abel E. Chernack, Providence, R. I.

LOOM, Velvet or Carpet. 1,116,411. Paul Girard, Lyon, France.

LOOM for Heavy Weaving, Automatic Positive Shuttle. 1,121,696. Thomas P. Walsh, Boston, Mass.

LOOMS, Warp-Regulating Mechanism for Weaving. 1,116,400. Robert Farnworth, Bolton, Eng.

LOOM. 1,118,083. Thomas P. Walsh, Boston, Mass.

LOOM-SHEDDING Mechanism. 1,116,814. George Goodline, Pawtucket, R. I.

LOOM with Automatic Positive Shuttle-Drive and Shuttle Changer for Heavy Work. 1,122,448. Thomas P. Walsh, Boston, Mass.

LOOM, Automatic Replenishing. 1,123,141. Alonzo E. Rhoades, Hopedale, Mass.

LOOM SHUTTLE. 1,121,724. Hudson W. Hakes, Millbury, Mass.

LOOM, Filling Replenishing. 1,123,148. Edward T. Stimpson, Hopedale, Mass.

LOOMS, Feeler Mechanism for. 1,122,838. Henry W. Youngquist, Manchester, N. H.

LOOMS, Break Detector and Warp Separator for. 1,123,137. Wm. Oldfield, New Bedford, Mass.

LOOM Bobbin-Feeler Stop Motion. 1,124,044. Jerry C. Liberty, Easthampton, Mass.

LOOM for Weaving Oriental Rugs. 1,117,115. Thomas P. Walsh, Boston, Mass.

LOOM LET-OFF or Warp Tension Device. 1,117,071. William Lord, New York.

MITTEN of Glove. Reversible. 1,118,758. Herman Gillian, Toledo, O.

OVERSEAMING MACHINE. 1,123,574. Lansing Onderdonk, New York.

SHUTTLE, Hand Threading. 1,122,880. Sumner A. Dudley, Taunton, Mass.

STOP MOTION Device. 1,123,025. Thomas C. Sheehan, Essex Falls, N. J.

SPINNING MACHINE Spindle. 1,116,844. Varild J. Robidou, Pawtucket, R. I.

STITCH MACHINE, Multiple-Needle-Chain. 1,123,576. Lansing Onderdonk, New York.

STOCKING. 1,123,014. Jacob Samuels, New York.

STOCKING ATTACHMENT. 1,123,015. Jacob Samuels, New York.

SPINNING MACHINE Thread Board. 1,118,226. Durell O. Pease, Hampden, Mass.

SHUTTLE. 1,117,002. Jean B. Daudelin, Fall River, Mass.

SHUTTLE THREADING Device. 1,117,073. John E. Masters, Framingham, Mass.

SPINNING or Twisting Machine, Ring. 1,121,942. Alonzo E. Rhoades, Hopedale, Mass.

SPINNING MACHINE Guide Wire. 1,117,596. James P. O'Connell, Crompton, R. I.

SPINNING or Twisting Apparatus. 1,122,167. Louis W. Southgate, Worcester, Mass.

SPINNING MACHINE. 1,122,231. Wliiam W. Caldwell, Fall River, Mass.

STITCHING MACHINE, Automatic Glove. 1,121,862. George E. Oathoit, Watervliet. N. Y.

STOCKING-WELTING Machine. 1,118,322. John P. Weis, Nyack, N. Y.

TEXTILE CONDITIONING and Storage Apparatus. 1,123,140. Isaac E. Palmer, Middletown, Conn.

TEXTILE CONDITIONING and Storage Apparatus. 1,123,139. Isaac E. Palmer, Middletown, Conn.

TEXTILE FIBER, Printed. 1,118,516. Edward W. Stifel, Wheeling, W. Va.

TEXTILE MACHINERY, Bearing for Side Rods for. 1,118,029. Charles E. Lovejoy, Lowell, Mass.

TEXTILE STORAGE Apparatus. 1,123,138. Isaac E. Palmer, Middletown, Conn.

THREAD GUIDE. 1,122,162. Michael E. Rudisill, Henry River, N. C.

TIRE FABRIC. 1,123,375. Harry K. Raymond, Akron, O.

UNDERGARMENT. 1,118,643. Edward Emmers, Royersford, Pa.

UNION FABRIC. 1,122,990. Delbert W. Northrop, Brookline, Mass.

UNION SUIT. 1,116,891. Morgan Hogan, Utica, N. Y.

WASHING and Scouring Machine. 1,122,227. John S. Ainley, Huddersfield, Eng.

WATERPROOFED Textile Material and Making Same. 1,121,647. Robert A. Marr, Norfolk, Va.

WATERPROOFING Textile Material and Product. 1,121,648. Robert A. Marr, Norfolk, Va.

WINDING MACHINE. 1,118,603. Simon W. Wardwell, Providence, R. I.

WINDING MACHINE, Yarn. 1,117,222. James W. Morrison, Staleybridge, Eng.

WOOL, Purification of Raw. 1,117,194. Franz Koch, Berlin, Germany.

WOVEN ARTICLE. 1,117,190. Victor H. Jennings, Worcester, Mass.

YARN-BEAM-HANDLING Device. 1,121,807. George W. Dearborn, Lowell, Mass.

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82,491. Carpets and textile rugs. Mark: Lovarmi. Owner: Mogridge & Fiscus, Mertztown, Pa.

82,703. Hosiery. Mark: "As-you-like-it". Owner: Berkshire Knitting Mills, Reading, Pa.

82,731. Petticoats, coats and suits. Mark: Dalebloom. Owner: Bloomingdale Bros., New York.

82,735. Men's half hose. Mark: Every Day. Owner: Consolidated Knitting and Spinning Mills, Reading, Pa.

66,433. Thread. Mark: Runswell. Owner: The Spool Cotton Co., Newark, N. J.

75,584. Hosiery. Mark: Custom Made. Owner: Novelty Hosiery Co., Allentown, Pa.

75,963. Cotton flannels, dometts, etc. Mark: Franklin. Owner: The Glencoe Mills, Burlington, N. C.

79,028. Hosiery. Mark: Yellow Ticket. Owner: Durham Hosiery Mills, Durham, N. C.

79,047. Woven and braided webbing, tapes, etc. Mark: Ansonia. Owner: The Ansonia O & C Co., Ansonia, Conn.

81,728. Outing shirts. Mark: Hi-Lo-Nek. Owner: Rauh Bros. & Co., Pittsburgh, Pa.

82,064. Cotton piece goods. Mark: Oxweave Owner: Mangold H. Ellenbogen, Paterson. N. J.

82,074. Cotton piece goods. Mark: Indicator. Owner: Everett Mills, Lawrence, Mass.

82,097. Sewing silk. Mark: Henry Campbell & Co., Belfast. Owner: Henry Campbell & Co., Ltd., Belfast, Ireland.

82,319. Cotton piece goods. Mark: Storm. Owner: Appleton Co., Lowell, Mass.

79,952. Knit and woven union suits. Mark: Imperial. Owner: The Imperial Underwear Co., Piqua, O.

80,599. Hosiery. Mark: Black Cat. Owner: Chicago-Kenosha Hosiery Co., Kenosha, Wis.

80,666. Japanese cotton crepe. Mark: Japanese Cotton Crepe. Owner: Mendelson Bros., San Francisco, Cal.

81,765. Towels. Mark: Delfeld. Owner: Herman L. Hohfeld, Philadelphia, Pa.

68,315. Thread. Mark: Wamesit. Owner: John C. Meyer, Lowell, Mass.

81,035. Ladies' knitted underwear. Mark: Rosary. Owner: Cooper, Coate & Casey Dry Goods Co., Los Angeles, Cal.

82,423. Bathing suits. Mark: Neptune's Daughter. Owner: Max Mayer & Sons Co., New York.

82,607. Cotton bags. Mark: Amazon. Owner: Amoskeag Mfg. Co., Manchester, N. H.

82,608. Cotton bags. Mark: Neptune. Owner: Amoskeag Mfg. Co., Manchester, N. H.

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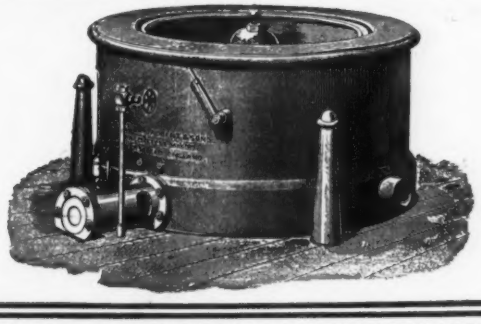

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——See Humidifying Apparatus.

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Bearings.
——See Ball Bearings and Roller Bearings.

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Altemus, J. K.
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Boilers.
——See Steam Boilers.

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Pearson, J. T.
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Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Brass Hinges.
Root, C. J., Co.

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Scaife, W. B., & Sons.

Brushers.
——See Napping Machines.

Brushes.
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Felton, S. A., & Son Co.
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Reece Button-Hole Machine Co.

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Buhlmann, A. W.
Firth, William, Co.
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Riley, C. E., Company.
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Card Feeds.
——See Automatic Feeds.

Card Grinding Machinery.
Atkinson, Haserick & Co.
Buhlmann, A. W.
Dronsfield Bros.
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Firth, William, Co.
Weinerth Knitting & Machine Co.

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——See Drying Machinery.

Cloth Expanders.
Arlington Machine Works.
Birch Bros., Somerville Machine Wks. (Albert Birch, prop.).
Leyland, Thomas, & Co.
Somerville Mach. Wks. (Albert Birch, prop.).

Cloth Shrinking Machinery.
Reliance Machine Works.

Alphabetical Index to Advertisers, with page numbers, follows this list.

Cloth Testers.
Perkins, B. F., & Son, Inc.
Scott, H. L., & Co.
Suter, Alfred.
Cloth Winders.
Firsching, J. A.
Clutches.
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Combs (Wool and Cotton).
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Hood, R. H., Company.
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Commercial Vehicles.
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Compressors (Air).
Allis-Chalmers Mfg. Co.
Condensers.
Allis-Chalmers Mfg. Co.
Buffalo Steam Pump Co.
Dean Bros. Steam Pump Works.
Dodge, C. S.
Conditioning and Testing.
U. S. Conditioning & Testing Co.
Conditioning Machines.
Buhlman, A. W.
Manufacturers Machine Co.
Cones (Paper).
Am. Textile Specialty Mchy. Co.
Pairpoint Corporation.
Conveying Systems.
Buffalo Forge Co.
Dodge Sales & Engineering Co.
Sturtevant, B. F., Co.
Conveyor Belting.
Gandy Belting Co.
Coolers (Air).
Power Specialty Co.
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Eppler's, John, Machine Works.
Cop Tubes.
Am. Textile Specialty Mchy. Co.
Pairpoint Corporation.
——See Paper Tubes.
Copper Expansion Joints.
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Scaife, W. B., & Sons.
Cotton.
Riley, C. E., Company.
Schwartz, L. H. A., & Co.
Cotton Dryers.
——See Drying Machinery.
Cotton Machinery.
Am. Textile Specialty Mchy. Co.
Ashworth Bros.
Atkinson, Haserick & Co.
Barber-Colman Co.
Brown Spin-Wright Cotton Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Cramer, Stuart W.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Dixon Lubricating Saddle Co.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Fales & Jenks Mch. Co.
H. & B. American Machine Co.
Klauder-Weldon Dyeing Mch. Co.
Leigh & Butler.
Mason Machine Works.
Metallic Drawing Roll Co., The.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Lowell Shops.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Stafford Co., The.
Tatham, William, Ltd.
Textile-Finishing Machinery Co.
Textile Machinery Co.
Wildman Mfg. Co.
Woonsocket Machine & Press Co.
Cotton Openers and Lappers.
Atkinson, Haserick & Co.
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Lowell Shops.
Cotton Softeners.
Bosson & Lane.
Harding & Fancourt, Inc.
Seydel Mfg. Co., The.
Wolf, Jacques & Co.
Cotton Waste Machinery.
Firth, William, Co.
Saco-Lowell Shops.
Smith & Furbush Mch. Co.
Tatham, William, Ltd.
Counting Machines.
Durant Manufacturing Co.
National Scale Co.
Root, C. J., & Co.
Couplings (Flexible-Insulated).
Bond Co., Charles.
Brown, A. & F., Co.
Couplings (Shaft).
Royersford Foundry & Machine Co.
Crayons.
American Crayon Co.
Lowell Crayon Co.
Credits.
National Credit Office.
Cutting Machines.
Cameron Mch. Co. (Rolling up and strip cutting).
Eastman Machine Co.
Firsching, J. A.
Perkins, B. F., & Son, Inc.
Weinerth Knitting & Machine Co.
Cylinder Oil (Superheated Steam).
Power Specialty Co.
Disinfectants.
Seydel Mfg. Co., The.
Dobbies.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.
Stafford Co., The.
Drawing Rolls.
Hood, R. H., Company.
H. & B. American Machine Co.
Metallic Drawing Roll Co.
Drinking Fountains.
Johns-Manville Co., H. W.
Rundle-Spence Mfg. Co.
Drives, Silent Chain.
Morse Chain Co.
Drying Boards.
Pearson, J. T.
Paramount Metal Form Drying Co.
Philadelphia Drying Mchy. Co.
Drying Machinery.
Arlington Machine Works.
Bailey, Frank.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Mach. Wks.
Buffalo Forge Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Decatur Fndry, Furnace & Mch. Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Philadelphia Textile Maghinery Co.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Sturtevant, B. F., Co.
Textile-Finishing Machinery Co.
Tolhurst Machine Works.
Dusters.
——See Wool and Waste Dusters.
Dust Collectors.
Buffalo Forge Co.
Buffalo Steam Pump Co.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.
Dyers Clogs.
Brown, Wm., Sons.
Dyers, Bleachers and Finishers.
Aberfoyle Mfg. Co.
Brophy's, T., Sons.
Davidson, John F.
Globe Dye Works Co.
Home Bleach & Dye Works.
Hopkinson Dyeing & Textile Wks.
Lorimer's, The, Wm. H., & Sons Co.
National Silk Dyeing Co.
Peerless Co.
Utica Willowvale Bleaching Co.
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Arlington Machine Works.
Autoforce Ventilating System.
Birch, Albert, Somerville Mach. Wks.
Birch Bros., Somerville Mach. Wks.
Buffalo Forge Co.
Buffalo Steam Pump Co.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Craw, J. W., Mchny. Co.
Curtis & Marble Machine Co.
Giles, J. H., Dyeing Machine Co.
Heathcote, John, & Son.
Hunt, Rodney, Mach. Co.
Hunter, James, Machine Co.
Hussong Dyeing Machine Co.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Mch. Co.
Klipstein, A., & Co.
Leigh & Butler.
Leyland, Thos., & Co.
Manufacturers Machine Co.
National Laundry Machinery Co.
Perkins, B. F., & Son, Inc.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Reliance Machine Works.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Somerville Mach. Wks. (Albert Birch, prop.).
Sturtevant, B. F., Co. (Drying).
Suter, Alfred.
Textile-Finishing Machinery Co.
Tolhurst Machine Works.
Uniform Dyeing Machine Co.
U. S. Hoffman Co.
Dye House Cans.
Diamond State Fibre Co.
Hill, James, Mfg. Co.
Dye House Trucks.
Bailey, Frank.
Diamond State Fibre Co.
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Dye Kettles.
New England Tank & Tower Co.
Stearns, A. T., Lumber Co.
Dye Sticks.
Bailey, Frank
Klauder-Weldon Dyeing Mch. Co.
New England Tank & Tower Co.
Dye Tubs.
——See Tanks, Tubs and Vats.
Dyestuffs and Chemicals.
American Dyewood Co.
Atteaux, F. E., & Co.
Badische Co.
Bayer Co., The, Inc.
Berlin Aniline Works.
Bischoff & Co.
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Electro Bleaching Gas Co.
Farbwerke-Hoechst Co.
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Geisenheimer & Co.
Harding & Fancourt, Inc.
Holliday, Read & Sons.
Innis Speiden & Co.
Johnson, Chas. A., & Co.
Kalle Color & Chemical Co., Inc.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Roessler & Hasslacher Chemical Co.
Seydel Mfg. Co.
Stein, Hirsch & Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.
Wing & Evans, Inc.
Wolf, Jacques & Co.
Worden Chemical Co.
Dynamos.
——See Electric Lighting.
Edgings.
——See Tapes, Braids and Edgings.

Alphabetical Index to Advertisers, with page numbers, follows this list.

The Eiffel Tower is now the central military wireless station of France. From it radiate the messages, the commands that direct the whole army of France battling on its 320-mile front. A break-down in that station of any of the apparatus would mean little short of a catastrophe for the allied armies.

Sturtevant Fans
REG. U. S. PAT. OFF.

are relied upon by the French Government to keep the set in operating condition. They were bought at the outbreak of the war to cool and ventilate the powerful spark gap of the apparatus.

Sturtevant Fans are used for every industrial purpose, for Heating, Drying, for Removing Moisture from bleacheries and dye houses, for Mechanical Draft, for Ventilating, Exhausting Foul Air, Conveying Dust and Wool, and for hundreds of other uses.

We have manufactured more fans during the last half century than all our competitors combined. Some of our fans have been running for twenty five, thirty, or even forty years. *Write for catalogs, mentioning this paper.*

B. F. Sturtevant Company
Hyde Park Boston, Mass.
and all principal cities of the world.

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AND ONE OF THE STURTEVANT FANS USED THERE

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General Electric Co.
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Westinghouse Electric & Mfg. Co.

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General Electric Co.

Electrical Supplies.
Johns-Manville Co., H. W.

Electric Driven Pumps.
Allis-Chalmers Mfg. Co.
Buffalo Steam Pump Co.
Dean Bros. Steam Pump Works.
General Electric Co.

Electric Fans.
Allis-Chalmers Mfg. Co.
Buffalo Forge Co.
Buffalo Steam Pump Co.
General Electric Co.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Hoists.
Allis-Chalmers Mfg. Co.
General Electric Co.

Electric Lighting.
Allis-Chalmers Mfg. Co.
Cooper Hewitt Electric Co.
General Electric Co.
Johns-Manville Co., H. W.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electric Motors.
Allis-Chalmers Mfg. Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.

Electrolyzer.
National Laundry Machinery Co.

Elevators.
Craig Ridgway & Son Co.
Decatur Fndry, Furnace & Mch. Co.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.
Salem Elevator Works.

Embossed Seals & Labels.
Mason, F. E., & Son.

Employes' Time Recorders.
Pettes & Randall Co.

Engines (Steam, Oil, Gas).
Allis-Chalmers Mfg. Co.
Buffalo Forge Co.
Fairbairn, Lawson, Combe, Barbour, Ltd.
International Gas Engine Co.
International Steam Pump Co.
Snow Steam Pump Plant.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.

Exhaust Heads.
Power Specialty Co.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Grease Extractors.
American Steam Gauge & Valve Mfg. Co.

Feed Water Heaters.
Blake & Knowles Steam Pump Works.
Scaife, W. B., & Sons.

Feed Water Pumps.
Buffalo Steam Pump Co.
Dean Bros. Steam Pump Works.
Goulds Mfg. Co.

Feed Water Purifiers.
American Water Softener Co.
International Filter Co.
Scaife, W. B., & Sons.

Feed Water Regulators.
American Steam Gauge & Valve Mfg. Co.

Feeds.
——See Automatic Feeds.

Felt Rotary Washers.
Hunt, Rodney, Machine Co.

Felting Machinery.
Hunt, Rodney, Machine Co.
Smith & Furbush Machine Co.

Fences (Iron) (Wire).
Wright Wire Co.

Fender Boards.
Case Brothers.

Fibre Boxes.
Diamond State Fibre Co.
Standard Fibre Co.

Fibre Trucks.
Diamond State Fibre Co.
Standard Fibre Co.

Filters.
American Water Softener Co.
Hungerford & Terry.
International Filter Co.
Norwood Engineering Co.
Permutit Co.
Scaife, W. B., & Sons.

Finishing Compounds.
——See Sizings.

Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Fire Brick.
Borgner, Cyrus, Co.
Johns-Manville Co., H. W.

Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

Fire Hose.
Eureka Fire Hose Co.
Goodyear Tire & Rubber Co.

Fire Hydrants.
Norwood Engineering Co.

Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.

Flexible Metal Hose.
Johns-Manville Co., H. W.

Fluted Rolls.
Firth, William, Co.
Hood, R. H., Company.
H. & B. American Machine Co.
Leigh & Butler.
Metallic Drawing Roll Co.
Riley, C. E., Company.

Flyers.
Bodden, Wm., & Son, Ltd.
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Textile Machinery Co.

Forges.
Buffalo Forge Co.
Sturtevant, B. F., Co.

Friction Clutches.
——See Clutches.

Friction Cones.
Evans Friction Cone Co.

Fuel Economizers.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Mach. Co.
Hunter, James, Mach. Co.
Kenyon, D. R., & Son.

Garnetts.
Hunter, James, Machine Co.
Leigh & Butler.
Smith & Furbush Machine Co.

Garnetted Stock.
Graves, Frank B.

Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gas Engines.
——See Engines.

Gas Systems.
Kemp Mfg. Co.

Gaskets (Superheated Steam).
Johns-Manville Co., H. W.
Power Specialty Co.

Gauges.
American Steam Gauge & Valve Mfg. Co. (Pressure and Vacuum).
Lunkenheimer Co., The.

Gears.
Brown, A. & F., Co.
Diamond State Fibre Co.
New Process Gear Corporation.

Gear Cutting Machine.
Whiton, The D. E., Co.

Gearing, Silent Flexible.
Morse Chain Co.

Generating Sets.
Allis-Chalmers Mfg. Co.
General Electric Co.
Sturtevant, B. F., Co.

Geyser Water Heater.
Sargent's Sons, C. G., Corp.

Greases.
Borne, Scrymser Co.
N. Y. & N. J. Lubricant Co.
Royersford Foundry & Machine Co.

Grinding and Polishing Machines.
Royersford Foundry & Machine Co.

Hangers.
——See Power Transmission Machinery.

Harness Twine.
Moore, C., & Co.

Harness and Frames.
Garland Mfg. Co.
Steel Heddle Mfg. Co.

Heating.
——See Ventilating Apparatus.

Heddles.
American Supply Co.
Atkinson, Haserick & Co.
Firth, William, Co.
Lavigne & Suter.
Steel Heddle Mfg. Co.

Hoists.
——See Engines, Hoisting.

Hoisting Apparatus.
Economy Engineering Co.
Hunt, Rodney, Machine Co.
N. Y. Revolving Portable Elevator Co.

Hose.
Johns-Manville Co., H. W.

Hose, Pneumatic.
Johns-Manville Co., H. W.
Parks, G. M., Co.

Hosiery Boards.
Pearson, J. T.
Paramount Metal Form Drying Co.
Philadelphia Drying Machinery Co.

Hosiery Labels.
Kaumagraph Co.

Humidifying Apparatus.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.
Parks, G. M., Co.

Humidity Controller.
American Moistening Co.
Carrier Air Conditioning Co. of America.
Cramer, Stuart W.

Hydraulic Rams.
Power Specialty Co.

Hydro Extractors.
Atkinson, Haserick & Co.
Broadbent, Thomas, & Sons.
Riley, C. E., Co.
Schaum & Uhlinger, Inc.
Schwartz, L. H. A., & Co.
Tolhurst Machine Works.

Indicators.
American Steam Gauge & Valve Mfg. Co. (Steam or Gas Engines).

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits).
Home Insurance Co.
——See Liability Insurance.

Jacquards.
Crompton & Knowles Loom Works.
Halton's, Thomas, Sons.

Jacquard Cards.
Case Bros., Inc.

Knit Goods Dryers.
——See Drying Machinery.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, George W.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

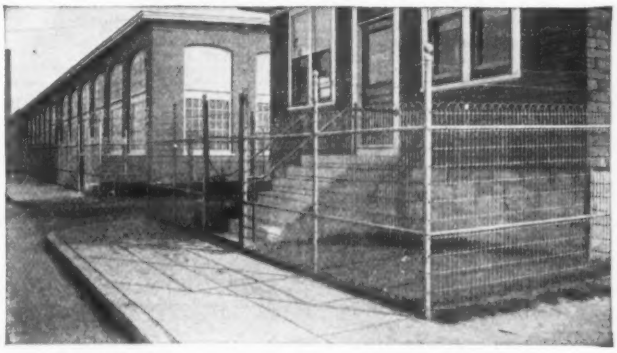
Knit Goods Finishing Machines, Crochet, Etc.
Hunt, Rodney, Machine Co.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Spindler, E. O.
Union Special Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

Knitting Machinery.
Acme Knitting Machine & Needle Co.
Ainslie Knitting Machine Co.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Continental Latch Needle Co.
Cooper, Charles.
Crane Mfg. Co.
Domestic Machinery Works.
Eppler's, John, Machine Works.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes Knitting Machine Co.
Lamb Knitting Machine Mfg. Co.
Leighton Machine Co.
Nye & Tredick Co.

Alphabetical Index to Advertisers, with page numbers, follows this list.

A Fence for Factory Buildings



must be substantial. And it should be neat and attractive. When you go to the expense of enclosing your plant you do not want to do the job over again in a year or two. The line of

"EXCELSIOR" TRADE MARK RUST PROOF

fences presents a great variety in the substantial kinds of fence **for Factories, Recreation Grounds, Playgrounds, Public Parks, Large Estates, Cemeteries and Public Buildings.**

Excelsior Rust Proof Fences are made of heavy wires and the heavy galvanizing prevents rust. The wires are clamped together at every crossing with patent clamps, so that they cannot be sprung or twisted out of place. Excelsior Rust Proof Fences are most economical because they last for many years.

We also build Excelsior Iron Fences. Special designs on request. *Send for Catalogue L.*

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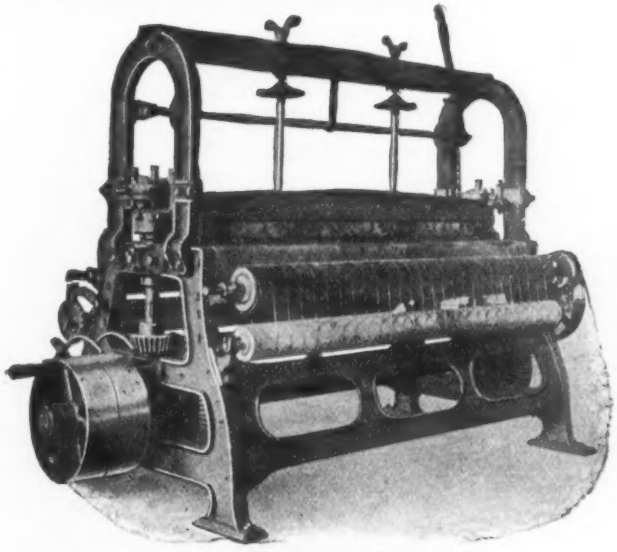

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For producing the following finishes:

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Petersham
Ratine
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Domestic Machinery Works.
Grosser Knitting Machine Co.
Spindler, E. O.
Textile Machine Works.
Walther, Otto.

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Cooper, Charles.
Crane Mfg. Co.
Excelsior Needle Co.
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Ives, L. T., Co.
Keystone Latch Needle Co.
Lamb Knitting Machine Mfg. Co.
Spindler, E. O.
Wardwell Needle Co.

Label Wire Stitchers.
Shoemaker, J. L., & Co.

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Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

Lace Machines.
Spindler, E. O.

Lamps, Electric.
Cooper Hewitt Electric Co.
General Electric Co.
Johns-Manville Co., H. W.
Westinghouse Electric & Mfg. Co.

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Graton & Knight Mfg. Co.
Schieren, Chas. A., Co.

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Electro Bleaching Gas Co.

Loom Harness Straps.
Graton & Knight Mfg. Co.

Loom Pickers.
Garland Mfg. Co.
Graton & Knight Mfg. Co.

Looms.
Atkinson, Haserick & Co.
Buhlmann, A. W.
Crompton & Knowles Loom Works.
Draper Company.
Leigh & Butler.
Mason Machine Works.
Richards, Atkinson & Haserick.
Saco-Lowell Shops.
Stafford Co., The.

Loopers.
Grosser Knitting Machine Co.
Hepworth, John W., & Co.
Leighton Machine Co.

Lubricants.
Borne, Scrymser Co.
N. Y. & N. J. Lubricant Co.
Royersford Foundry & Machine Co.
S. K. F. Ball Bearing Co.

Lubricators.
Lunkenheimer Co.

Lug Straps.
Graton & Knight Mfg. Co.

Lumpers.
Dodge, C. S. (and Willowers).
Gerry, George, & Son.
Schofield, William, Co.

Machinists' Tools.
Whiton, The D. E., Co.

Magnesia Products.
Johns-Manville Co., H. W.

Marking Pots.
Bradley, A. J.

Mattress Machinery.
Dodge, C. S.

Measuring and Folding Machines.
Curtis & Marble Machine Co.
Elliot & Hall.

Mechanical Draft.
Buffalo Forge Co.
Buffalo Steam Pump Co.
Sturtevant, B. F., Co.

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Dodge Sales & Engineering Co.
Sturtevant, B. F., Co.

Mechanical Engineers.
Buffalo Forge Co.
Dodge Sales & Engineering Co.
Myrick, J. W. H.
Philadelphia Drying Machinery Co.
Sturtevant, B. F., Co.

Mercerizers.
Globe Dye Works.
Home Bleach & Dye Works.
Lorimer's, Wm. H., Sons Co.

Mercerizing Machinery.
Buhlmann, A. W.
Butterworth, H. W., & Sons.
Klauder-Weldon Dyeing Mach. Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Textile-Finishing Machinery Co.
Wolf, Jacques & Co.

Metallic Fire-Proof Window Frames and Sashes.
Badger, E. B., & Sons Co.

Metallic Packing.
Power Specialty Co.

Metallic Rolls.
Metallic Drawing Roll Co.

Mill Architects.
——See Architects and Mill Engineers.

Mill Builders and Engineers.
Dean, F. W., Inc.
Ferguson, John W.
Main, Charles T.

Mill Piping.
Parks Co., G. M.

Mill Supplies.
American Supply Co.
Atkinson, Haserick & Co.
Bamford & Smith.
Bond, Charles, Co.
Brown's, Wm., Sons.
Buckley's, Benjamin, Sons.
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Easton & Burnham Mch. Co.
Eureka Fire Hose Co.
Fairbairn, Lawson, Combe, Barbour, Ltd.
Firth, William, Co.
Garland Mfg. Co.
Graton & Knight Mfg. Co.
Hood, R. H., Co.
Kunze, Otto.
Lane, W. T., & Bro.
Leigh & Butler.
Lunkenheimer Co.
N. Y. & N. J. Lubricant Co.
Pairpoint Corporation.
Philadelphia Drying Machinery Co.
Powell, Wm., Co.
Richardson Bros.
Riley, C. E., Company.
Stephenson Mfg. Co.

Millwrights.
Brown, A. & F., Co.
Hunter, James, Machine Co.

Moth Exterminator.
Berlin Aniline Works.

Motors.
——See Electric Motors.

Motor Trucks.
Kissel Motor Car Co.

Napping Machinery.
Birch Bros., Somerville Mach. Wks.
Buhlmann, A. W.
Curtis & Marble Machine Co.
Leigh & Butler.
Schwartz, L. H. A., & Co.

Netting Machines.
Spindler, E. O.

Noils (Silk).
Ryle, Wm., & Co.

Non-fluid Oils.
N. Y. & N. J. Lubricant Co.

Oil Cups.
Lunkenheimer Co.

Oil Engines.
——See Engines.

Oils.
Borne, Scrymser Co.
Harding & Fancourt, Inc.
N. Y. & N. J. Lubricant Co.

Oil Stencil and Press Board Paper.
Bradley, A. J.

Oiling Systems.
Lunkenheimer Co.

Overseaming Machines.
Merrow Machine Co.
Spindler, E. O.

Packing (Asbestos).
Johns-Manville Co., H. W.

Packings (Leather).
Graton & Knight Mfg. Co.

Packings (Metallic).
Johns-Manville Co., H. W.

Packing (Rubber).
Johns-Manville Co., H. W.

Paints.
Chaffee, Thomas K., Co.
Johns-Manville Co., H. W.
U. S. Gutta Percha Paint Co.

Pantagraphs for Mill Engraving.
Johnson, C. A., & Co.

Paper.
Merwin Paper Co.
Richardson Bros.

Paper Boards.
Merwin Paper Co.

Paper Cones and Tubes.
Am. Textile Specialty Mchy. Co.
Pairpoint Corporation.

Pastes (Specialty).
Pohl Machine Co.

Patent and Trade Mark Solicitors.
Crosby & Gregory.
Heard, Smith & Tennant.
Munn & Co.

Patent Attorney.
Calmore & Co.

Penstocks.
Hunt, Rodney, Machine Co.
Stearns Lumber Co., A. T.

Perforated Metal.
Allis-Chalmers Mfg. Co.
Beckley Perforating Co.

Peroxide of Hydrogen.
Roessler & Hasslacher Chemical Co.

Peroxide of Sodium.
Roessler & Hasslacher Chemical Co.

Picker Pins.
Dodge, C. S.

Pickers, Leather.
Garland Mfg. Co.
Graton & Knight Mfg. Co.

Picker Teeth.
Dodge, C. S.

Pinking Machines.
Cameron Machine Co.

Pipes and Fittings.
Parks, G. M., Co.
Scaife, W. B., & Sons.

Plush Machinery.
Buhlmann, A. W.

Pneumatic Conveying.
——See Ventilating.

Portable Elevators.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.

Power Transmission Machinery.
Allis-Chalmers Mfg. Co.
American Pulley Co.
Brown, A. & F., Co.
Brown Spin-Wright Cotton Co.
Cresson-Morris Co.
Dodge Sales & Engineering Co.
Evans, G. Frank.
Fairbairn, Lawson, Combe, Barbour, Ltd.
Hunt, Rodney, Machine Co.
Hunter, James, Machine Co.
Morse Chain Co. (Silent Chain).
Leffel, James, & Co.
Perkins, B. F., & Son, Inc.
Reeves Pulley Co.
Royersford Foundry & Machine Co.
Saginaw Manufacturing Co.
Schofield, William, & Co.
Sellers, William, & Co.

Alphabetical Index to Advertisers, with page numbers, follows this list.

S. K. F. Ball Bearing Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.

Preparatory Machinery (Cotton).
Firth, William, Co.
H. & B. American Machine Co.
Leigh & Butler.
Potter & Johnston Mch. Co.
Riley, C. E., Company.
Saco-Lowell Shops.

Preparatory Machinery (Wool and Worsted).
Smith & Furbush Mch. Co.

Presses (Drill and Punch).
Boomer & Boschert Press Co.
Butterworth, H. W., & Sons Co.
Craw, J. W., Machinery Co.
Curtis & Marble Machine Co.
Phila. Drying Machinery Co.
Reliance Machine Works.
Royersford Foundry & Machine Co. (also Trimming Presses).
Saco-Lowell Shops.
Spence & Rideout.
Textile-Finishing Machinery Co.
U. S. Hoffman Co.
Woonsocket Machine & Press Co.
Worthington, Henry R.

Press Boards.
Case Bros., Inc.
Diamond State Fibre Co.

Press Papers.
Merwin Paper Co.
Philadelphia Drying Mchy. Co.
Richardson Brothers (Importers and Dealers).

Printing Machinery.
Rice, Barton & Fales Mach. & Iron Works.

Pulley Covering.
Graton & Knight Mfg. Co.

Pulleys.
——See Power Transmission Machinery.

Pumps.
Allis-Chalmers Mfg. Co.
Blake-Knowles Steam Pump Works.
Dean Bros. Steam Pump Works.
Deane Steam Pump Plant.
Buffalo Steam Pump Co.
Goulds Mfg. Co.
Hunt, Rodney, Machine Co.
International Steam Pump Co.
Philadelphia Drying Machinery Co.
Textile-Finishing Machinery Co.
Worthington, Henry R.

Pump Governors.
Dean Bros. Steam Pump Works.

Punches and Dies.
Royersford Foundry & Machine Co.

Purifying and Filtration Plants.
American Water Softener Co.
Dodge Sales & Engineering Co.
Hungerford & Terry.
Norwood Engineering Co.
Permutit Co.
Scaife, Wm. B., & Sons.

Quillers.
Foster Machine Co.
Payne, G. W., & Co.
Universal Winding Co.

Rag Pickers.
Dodge, C. S.
Schofield, Wm., Co.
Smith & Furbush Machine Co.
Tatham, William, Ltd.

Raw Hide Gears.
New Process Gear Corporation.

Recording Instruments.
American Steam Gauge & Valve Mfg. Co.

Reed and Harness Manufacturers.
American Supply Co.

Reed Making and Brushing Machines.
Lavigne & Suter.

Reed Wire.
Lavigne & Suter.

Revolving Portable Elevators.
N. Y. Revolving Portable Elevator Co.

Ribbons.
Cheney Bros.
Macungie Silk Co.

Rodent Exterminator.
Virus Ltd. Inc.

Roller Bearings.
Royersford Foundry & Machine Co. (also Babbitted Ring Oiling).

Roller Covers.
Graton & Knight Mfg. Co.

Roller Logs.
Hartwell, G. E.

Roofing.
Barrett Mfg. Co.
Johns-Manville Co., H. W.

Rope Dressing & Preservatives.
Dodge Sales & Engineering Co.

Rope Transmission.
Brown, A. & F., Co.
Cresson-Morris Co.
Dodge Sales & Engineering Co.
Hunter, James, Machine Co.
Lambeth Rope Corporation.

Roving Cans.
American Vulcanized Fibre Co.
Diamond State Fibre Co.
Hill, James, Mfg. Co.
Standard Fibre Co.

Roving Reels.
Scott, H. L., & Co.

Rub Aprons.
Graton & Knight Mfg. Co.

Safety Set Screws.
Allen Manufacturing Co.

Sanitary Fountains.
Johns-Manville Co., H. W.
Rundle-Spence Mfg. Co.

Sash Operators.
Drouve Co., G.

Scales (Automatic).
American Kron Scale Co.

Scales.
National Scale Co.
Torsion Balance Co.

Scallop Machines.
Merrow Machine Co.

Schappe (French Spun).
Suter, Alfred.

Schools.
International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
Philadelphia Textile School.

Scouring Machines.
——See Wool Washing, Preparing and Drying Machinery.

Second-hand Machinery.
——See Mchy. Dealers, also Classified Ads.

Selling Agent.
Shirley, Harold R.

Separators (Yarn).
Draper Co., The.
H. & B. American Machine Co.

Sewing Machines and Supplies.
Arlington Machine Works.
Birch, Albert, Somerville Machine Works.
Birch Bros., Somerville Mach. Wks.
Curtis & Marble Machine Co.
Dinsmore Mfg. Co.
Fales, L. F.
Somerville Machine Works (Albert Birch, prop.).
Spindler, E. O.
Textile Finishing Machinery Co.
Union Special Machine Co.
Willcox & Gibbs.

Shafting Hangers, Etc.
——See Power Transmission Machinery.

Shafting Rings (Leather).
Graton & Knight Mfg. Co.

Shearing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

Sheet Metal Work.
Scaife, W. B., & Sons.

Shoddy Pickers.
Curtis & Marble Machine Co.
Dodge, C. S.
Smith & Furbush Machine Co.

Shuttles.
——See Bobbins, Spools, Shuttles, Etc.

Silk Dryers.
——See Drying Machinery.

Silk Machinery.
Arlington Machine Works.
Atkinson, Haserick & Co.
Buhlmann, A. W.
Butterworth, H. W., Sons Co.
Crompton & Knowles Loom Works.
Leigh & Butler.
Lowell Machine Shop.
Mason Machine Works.
Schwartz, L. H. A., & Co.
Suter, Alfred.
Textile-Finishing Machinery Co.

Silk Mill Supplies.
Hall, I. A., & Co.

Silk Noils.
Fawcett, Hughes.

Silk Paste.
Pohl Machine Co.

Silks (Raw).
Roiker, F.
Villa, A. P., & Bros.

Silk Specialist, Consulting.
Chittick, James.

Silk Throwsters.
Villa, A. P., & Bros.

Singe Plates.
Butterworth, H. W., Sons Co.
Taunton-New Bedford Copper Co.
Textile-Finishing Machinery Co.

Singeing Machines.
Birch Bros., Somerville Mach. Wks.
Butterworth, H. W., Sons Co.
Curtis & Marble Machine Co.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Smith, Drum & Co.
Textile-Finishing Machinery Co.

Sizing, Starch and Gums.
American Diamalt Co.
Arabol Mfg. Co.
Corn Products Refining Co.
Keever Starch Co.
Malt-Diastase Co.
Seydel Mfg. Co., The.
Stein, Hirsh & Co.
Wolf, Jacques & Co.
Worden Chemical Works.

Skein Mercerizing Machines.
Buhlmann, A. W.

Skylights.
Drouve Co., G.
Van Noorden, E., & Co.

Slashers.
Leigh & Butler.
Riley, C. E., Company.
Saco-Lowell Shops.
Textile-Finishing Machinery Co.

Slitting & Rewinding Machines.
Cameron Machine Co.

Soaps.
Dobbins Soap Mfg. Co.
Draper, J. O., Co.
Seydel Mfg. Co., The.
Wrisley, Allen B., Co.

Soaping Machines.
Hunt, Rodney, Machine Co.

Softeners.
——See Cotton Softeners.

Spindles.
Atkinson, Haserick & Co.
Bamford & Smith.
Bodden, Wm., & Son, Ltd.
Buckley's, Benjamin, Sons.
Draper Company.
Easton & Burnham Mach. Co.
H. & B. American Machine Co.
Leigh & Butler.
Lowell Machine Shop.
Riley, C. E., Company.

Spindle Tubes.
Atkinson, Haserick & Co.
Bamford & Smith.
Firth, William, Co.
Lowell Machine Shop.
Richards, Atkinson & Haserick.
Riley, C. E., Company.

Spinning Frames.
Fairbairn, Lawson, Combe, Barbour, Ltd.

Spinning Frame Saddles.
Dixon Lubricating Saddle Co.

Spinning Rings.
Draper Company.
H. & B. American Machine Co.
Whitinsville Spinning Ring Co.

Spinning Tubes.
Buckley's, Benjamin, Sons.
Lowell Machine Shop.
Speed and Stephenson.

Alphabetical Index to Advertisers, with page numbers, follows this list.

Spools.
——See Bobbins, Spools, Shuttles, Etc.
Spoolers.
Allen, A. W.
Draper Company.
Easton & Burnham Machine Co.
Lindsay, Hyde & Co.
Payne, George W., & Co.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
Spindler, E. O.
Spot and Stain Removing Machine.
Sanitex Co., The.
Sprockets, Silent Chain.
Morse Chain Co.
Stacks.
Scaife, W. B., & Sons.
Steam Boilers.
Scaife, W. B., & Sons.
Steam Engines.
——See Engines.
Steam Jacket Kettles.
Badger, E. B., & Sons Co.
Butterworth, H. W., & Sons Co.
Textile-Finishing Machinery Co.
Steam Pumps.
Blake & Knowles Steam Pump Works.
Buffalo Steam Pump Co.
Dean Bros. Steam Pump Works.
Deane Steam Pump Plant.
International Steam Pump Co.
Worthington, Henry R.
Goulds Manufacturing Co., The.
Steam Specialties.
American Steam Gauge & Valve Co.
Butterworth, H. W., Sons Co.
Lunkenheimer Co., The.
Powell, Wm., Co.
Sargent's Sons, C. G., Corp.
Sturtevant, B. F., Co.
Textile-Finishing Machinery Co.
Steam Traps.
American Steam Gauge & Valve Mfg. Co.
Sturtevant, B. F., Co.
Steam Turbines.
Allis-Chalmers Mfg. Co.
Buffalo Forge Co.
Buffalo Steam Pump Co.
General Electric Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.
Stencil Machines.
Bradley, A. J.
Stock Dryers.
——See Drying Machinery.
Stocking Dryers.
——See Drying Machinery.
Stop Motion for Knitting Machines.
Boss Knitting Machine Works.
Crawford Manufacturing Co.
Stop Motion for Looms.
——See Warp Stop Motions.
Strappings (Leather).
Graton & Knight Mfg. Co.
Superheaters, Foster.
Power Specialty Co.
Tanks, Tubs and Vats.
Hall, Amos H., Son & Co.
Klauder-Weldon Dyeing Mach. Co.
New England Tank & Tower Co.
Textile-Finishing Machinery Co.
Tolhurst Machine Works.
Scaife, W. B., & Sons.
Stearns, A. T., Lumber Co.
Woolford, G., Tank Mfg. Co.
Tapes, Braids and Edgings.
Barton, F. C.
Bias Narrow Fabric Co.
Friedberger-Aaron Mfg. Co.
Industrial Tape Mills Co.
Krout & Fite Mfg. Co.
Lambeth Rope Corporation.
Macungie Silk Co.
Maurer, F. W., & Sons Co.
Weimar Bros.
Tassels.
Suter, Alfred.
Telephones.
Pettes & Randall Co.
Temples.
Draper Co.
Testing Apparatus.
Perkins, B. F., & Son, Inc.
Scott, H. L., & Co.
Torsion Balance Co.
Textile Chemists.
Little, A. D., Inc.
Textile Engineers.
Buhlmann, A. W.
Dodge Sales & Engineering Co.
Myrick, J. W. H.
Suter, Alfred.
——See also Architects and Mill Engineers.
Textile Schools.
——See Schools.
Thread Guides.
Palmer, I. E., Co.
Time Detectors.
Watchman's Clock & Supply Co.
Time Recorders.
Follett Time Recording Co.
International Time Recording Co.
Tiering Machines.
Economy Engineering Co.
N. Y. Revolving Portable Elevator Co.
Tinsel Machinery.
Eppler's, John, Machine Works.
Tools for Turning Calender Rolls.
Dickinson, Thomas L.
Top Cutting Machines.
Wildman Mfg. Co.
Trade Mark Law.
Crosby & Gregory.
Heard, Smith & Tennant.
Trade Mark Stamps.
Kaumagraph Company.
Trucks.
Bailey, Frank.
Diamond State Fibre Co.
Lane & Bro., W. T.
National Scale Co.
Standard Fibre Co.
Tubes.
Fairpoint Corporation.
Standard Fibre Co.
Tubs.
——See Tanks, Tubs and Vats.
Turbines.
——See Water Wheels and Steam Turbines.
Twine.
Moore, C., & Co.
Richardson Bros.
Twist Counters.
Scott, H. L., & Co.
Suter, Alfred.
Twisting Machinery.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
Underwear Press.
Craw, J. W., Machinery Co.
U. S. Hoffman Co.
Vacuum Extracting Machines.
Buhlmann, A. W.
Valves.
American Steam Gauge & Valve Mfg. Co. (Pop, Safety and Relief).
Lunkenheimer Co.
Powell, Wm., Co.
Valves (Rubber).
Johns-Manville Co., H. W.
Variable Speed Transmission.
Hunter, James, Machine Co.
Reeves Pulley Co.
Vats.
——See Tanks, Tubs and Vats.
Velvet Machinery.
Buhlmann, A. W.
Butterworth, H. W., & Sons Co.
Schwartz, L. H. A., & Co.
Textile Finishing Machinery Co.
Ventilating Apparatus.
American Moistening Co.
Autoforce Ventilating System.
Berry, A. Hun.
Buffalo Forge Co.
Buffalo Steam Pump Co.
Carrier Air Conditioning Co. of America.
General Electric Co.
Parks, G. M., Co.
Perkins, B. F., & Son, Inc.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.
Sturtevant, B. F., Co.
Tolhurst Machine Works.
Ventilating Engineer.
Myrick, J. W. H.
Vulcanized Fibre.
American Vulcanized Fibre Co.
Diamond State Fibre Co.
Hill, James.
Standard Fibre Co.
Wadding Machinery.
Tatham, William, Ltd.
Warpers.
Crompton & Knowles Loom Works
Draper Company.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
Warping.
Smith, Alexander & Son.
Warping and Beaming Machinery.
Altemus, J. K.
Crompton & Knowles Loom Works
Draper Company.
Lever, Oswald, Co.
Smith & Furbush Machine Co.
Suter, Alfred.
Warp Stop Motions.
Crompton & Knowles Loom Works.
Draper Company.
Warp Tying Machines.
Barber-Colman Co.
Washers (Cloth).
Arlington Machine Works.
Birch, Albert, Somerville Machine Works.
Birch Bros., Somerville Mach. Wks.
Butterworth, H. W., & Sons Co.
Hunt, Rodney, Machine Co.
Hunter, James, Machine Co.
Kenyon, D. R., & Son.
Philadelphia Drying Machinery Co.
Somerville Machine Works (Albert Birch, prop.).
Textile-Finishing Machinery Co.
Washers (Leather).
Graton & Knight Mfg. Co.
Washing Soda.
Ford, J. B., Co.
Waste Reclaiming Machinery.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
Waste Washing Machines.
Tatham, William, Ltd.
Watchman's Clocks.
Pettes & Randall Co.
Watchman's Clock and Supply Co.
Water Chemists.
American Water Softener Co.
Hungerford & Terry.
Permutit Co.
Scaife, W. B., & Sons Co.
Waterproofing Materials.
Barrett Mfg. Co.
Johns-Manville Co., H. W.
Water Purifiers and Filters.
American Water Softener Co.
Hungerford & Terry.
International Filter Co.
Permutit Co.
Scaife, W. B., & Sons Co.
Water Softeners.
American Water Softener Co.
Dodge Sales & Engineering Co.
Ford, J. B., Co.
Hungerford & Terry.
International Filter Co.
Norwood Engineering Co.
Permutit Co.
Scaife, W. B., & Sons Co.
Water Towers.
New England Tank & Tower Co.
Water Wheel Governors.
Hunt, Rodney, Machine Co.
Water Wheels.
Allis-Chalmers Mfg. Co.
Hunt, Rodney, Machine Co.
Leffel, James, & Co.
Weighing Apparatus.
American Kron Scale Co.
Winders (Cotton, Woolen and Worsted).
Altemus, J. K.
Buhlmann, A. W.
Crompton & Knowles Loom Works.
Easton & Burnham Machine Co.
Firsching, J. A.
Foster Machine Co.
Leigh & Butler.
Lever, Oswald, Co.
Lindsay, Hyde & Co.
Payne, Geo. W., & Co.
Saco-Lowell Shops.
Smith & Furbush Machine Co.
Universal Winding Co.

Alphabetical Index to Advertisers, with page numbers, follows this list.

Winders (Back).
Allen, A. W.

Winders (Hosiery).
Allen, A. W.
Altemus, Jacob K.
Easton & Burnham Machine Co.
Foster Machine Co.
Grosser Knitting Machine Co.
Leighton Machine Co.
Lever, Oswald, Co., Inc.
Payne, G. W., & Co.
Saco-Lowell Shops.
Spindler, E. O.
Universal Winding Co.

Wood Pulleys.
Dodge Sales & Engineering Co.
Saginaw Manufacturing Co.

Wool.
Atkinson, Haserick & Co.

Wool Bagging Machines.
Dodge, C. S.

Wool Cleaning Compound.
Ford, J. B., Co.

Wool Combing Machinery.
Atkinson, Haserick & Co.
Crompton & Knowles Loom Works.
Leigh & Butler.
Riley, C. E., Company.

Wool Dryers.
——See Drying Machinery.

Wool Oil Compound.
Marston, John P.

Wool and Waste Dusters.
Dodge, C. S.
Leigh & Butler.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Smith & Furbush Machine Co.

Woolen and Worsted Machinery.
Altemus, Jacob K.
Arlington Machine Works.
Atkinson, Haserick & Co.
Birch, Albert, Somerville Machine Works.
Birch Bros., Somerville Mach. Wks.
Brecher, Felix.
Buhlmann, A. W.
Butterworth, H. W., Sons Co.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Fales, L. F.
Hood, R. H., Co.
Hunt, Rodney, Machine Co.
Hunter, Jas., Machine Co.
Jefferson, Edw., & Bro.
Kenyon, D. R., & Son.
Klauder-Weldon Dyeing Mach. Co.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Saco-Lowell Shops.
Sargent's, C. G., Sons.
Schofield, Wm., Co.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Somerville Machine Works (Albert Birch, prop.).
Textile-Finishing Machinery Co.
Woonsocket Machine & Press Co.

Wool Oils.
Borne, Scrymser Co.
Seydel Mfg. Co.

Wool Washing, Preparing and Drying Machinery.
Atkinson, Haserick & Co.
Hunter, Jas., Machine Co.
Leigh & Butler.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
Sargent's, C. G., Sons.
Schwartz, L. H. A., & Co.
Smith & Furbush Machine Co.
Speed & Stephenson.
Tolhurst Machine Works.

Yarn Conditioning Machines.
Emerson Apparatus Co.
Sargent's, C. G., Sons.
Suter, Alfred.

Yarn Dryers.
——See Drying Machinery.

Yarn Testers.
Birch Bros., Somerville Mach. Wks.
Scott, H. L., & Co.
Suter, Alfred.
Torsion Balance Co., The.

YARNS, THREADS, ETC.

Carpet Yarns.
Lees, Jas., & Sons Co.

Cotton Yarns.
Jamieson, Jas. B.
Jenckes Spinning Co.
Littauer, Ludwig.
Mindlin & Rosenman.
Mitchell, Jas. E., & Co.
Montgomery, J. R., Co.
Monument Mills.
Orswell Mills.
Porter, T. J., & Sons.
Sternberg, Fred, & Co.
Street, J. F., & Co.
Whitman, William, Co.

Flax, Hemp, Jute and Ramie.
Fawcett, Hughes.
Littauer, Ludwig.
Mindlin & Rosenman.
Porter, T. J., & Sons.
Ramie Agency.
Sternberg, Fred, & Co.

Gassed Yarns.
Jamieson, Jas. B.
Littauer, Ludwig.
Mindlin & Rosenman.
Sternberg, Fred, & Co.
Whitman, William, Co.

Glazed Yarns.
Jamieson, Jas. B.
Littauer, Ludwig.
Lorimer's, Wm. H., & Sons Co.
Mindlin & Rosenman.
Orswell Mills.
Sternberg, Fred, & Co.
Whitman, William, Co.

Harness Twine.
Fawcett, Hughes.
Moore, C., & Co.
Sternberg, Fred, & Co.

Hosiery and Knitting Yarns.
Hyde, E. S.
Jenckes Spinning Co.
Littauer, Ludwig.
Mindlin & Rosenman.
Mitchell, Jas. E., & Co.
Monument Mills.
Porter, T. J., & Sons.
Sternberg, Fred, & Co.
Whitman, William, Co.

Linen Yarns.
Fawcett, Hughes.
Lindsay, Thompson & Co., Ltd.
Porter, T. J., & Sons.

Mercerized Yarns.
Aberfoyle Mfg. Co.
American Silk Spinning Co.
Jamieson, Jas. B.
Littauer, Ludwig.
Mindlin & Rosenman.
Porter, T. J., & Sons.
Sternberg, Fred, & Co.
Whitman, William, Co.

Mohair Yarns.
Littauer, Ludwig.
Mindlin & Rosenman.
Montgomery, J. R., Co.
Whitman, William, Co.

Novelty Yarns, Tinsels, Silk Nells, Etc.
American Silk Spinning Co.
Jamieson, Jas. B.
Jenckes Spinning Co.
Littauer, Ludwig.
Mindlin & Rosenman.
Montgomery, J. R., Co.
Nonotuck Silk Co.
Sternberg, Fred, & Co.
Villa, Stearns & Co.

Silk Yarns.
American Silk Spinning Co.
Cheney Bros.
Nonotuck Silk Co.
Ryle, Wm., & Co.
Sauquoit Silk Mfg. Co.
Street, J. F., & Co.
Suter, Alfred.
Villa, Stearns & Co.

Silk Yarns (Artificial).
Littauer, Ludwig.
Mindlin & Rosenman.

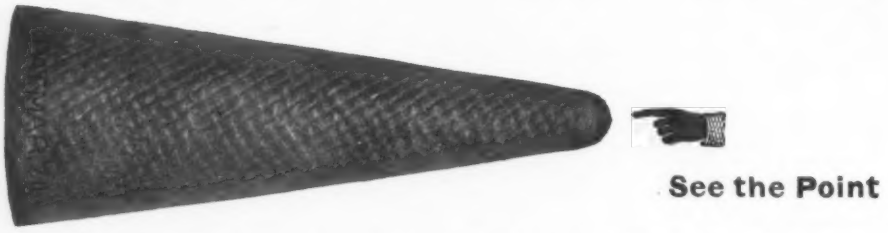
Woolen and Merino Yarns.
Eaton Rapids Woolen Mills.
Hyde, E. S.
Jenckes Spinning Co.
Littauer, Ludwig.
Mindlin & Rosenman.
Shirley, Harold R.
Street, J. F., & Co.

Woolen Yarns.
Jamieson, Jas. B.
Lees, Jas., & Sons Co.
Littauer, Ludwig.
Mindlin & Rosenman.
Shirley, Harold R.

Worsted Yarns.
Lees, Jas., & Sons Co.
Littauer, Ludwig.
Mindlin & Rosenman.
Shirley, Harold R.
Whitman, William, Co.

Alphabetical Index to Advertisers, with page numbers, follows this list.

The Perfect Patent Knit-All Cone



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The smooth round polished point allows the yarn to knit off without catching and breaking

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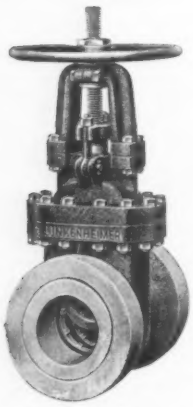

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Alphabetical Index to Advertisers

Aberfoyle Mfg. Co. 184b
Acme Ktg. Mch. & Needle Co.. 235
Ainslie Knitting Machine Co. .. 236
Allen Mfg. Co. 209
Allis-Chalmers Mfg. Co. 207
Altemus, Jacob K. ..... —
American Crayon Co. 173
American Diamalt Co. 216
American Dyewood Co. 179
American Kron Scale Co. 176
American Moistening Co. 33
American Pulley Co., The 174
American Silk Spinning Co. 199
American Steam Gauge & Valve Mfg. Co. 44
American Supply Co. 208
Am. Textile Specialty Mchy. Co. 15
American Vulvanized Fibre Co. 44
American Water Softener Co. .. 217
Arabol Mfg. Co., The 219
Arlington Machine Works 45
Ashworth Bros. 45
Atkinson, Haserick & Co. 176
Atteaux, F. E. & Co. 217
Autoforce Ventilating System .. 162

Badische Company 48
Badger, E. B., & Sons Co. 32
Bailey, Frank 217
Bamford & Smith 211
Barber-Colman Co. 211
Barrett Manufacturing Co. 204
Barton, F. C. 208
Bayer Co., The, Inc. 219
Beckley Perforating Co. 195
Berlin Aniline Works 216
Berry, A. Hun 41
Bias Narrow Fabric Co. 208
Birch, Albert 34
Birch Bros. 34
Bischoff, C., & Co. 219
Blake & Knowles Steam Pump Works 240
Bodden, Wm., & Son, Ltd. 38
Bond, Charles, Co. 195
Boomer & Boschert Press Co. .. 190
Borgner, Cyrus, Co. 213
Borne, Scrymser Co. 32
Boss Knitting Machine Works.. 234
Bosson & Lane 215
Bradley, A. J. 188
Breedon's Son, Wm. 239
Brinton, H., & Co. 233
Broadbent, Thomas, & Sons 145
Brophy's Sons, T. 212
Brown, A. & F., Co. 190
Brown's, Wm., Sons 213
Brown Spin-Wright Cotton Co.. 39
Buckley's, Benj., Son 188
Buffalo Forge Co. ..... —
Buffalo Steam Pump Co. 31
Buhlmann, A. W. 40
Bukey Service 37
Butterworth, H. W., & Sons Co. 1

Calmore & Co. 162
Cameron Machine Co. 20
Carrier Air Conditioning Co. of America 7
Case Brothers 239
Cassella Color Co. 214
Chaffee Bros.' Company 174
Chaffee, Thomas K., Co. 46
Cheney Bros. 196
Chittick, James 198
Claes & Flentje 236
Cocker, M., & Co. ..... —
Continental Latch Needle Co. .. 239
Cooper, Charles 235
Cooper Hewitt Electric Co. 201
Corn Products Refining Co. 18
Cramer, Stuart W. 22
Crane Mfg. Co. 229
Craw, J. W., Machinery Co. 238
Crawford Manufacturing Co. ... 235
Cresson-Morris Co. 42
Crompton & Knowles Loom Works 16
Crosby & Gregory 162
Curtis & Marble Machine Co. ... 209

Davidson, John F. 212
Dean Bros. Steam Pump Works 45
Deane Steam Pump Plant .....
Decatur Foundry, Furnace & Machine Co. 172
Diamond State Fibre Co. 206
Dickinson, Thomas L. 176
Dinsmore Mfg. Co. 41
Dixon Lubricating Saddle Co. .. 174
Dobbins Soap Mfg. Co. 211
Dodge, C. S. 44
Dodge Sales & Engineering Co. 159
Domestic Machinery Works 239
Draper Company 2-3
Draper, J. O., Co. 194
Dronsfield Bros., Ltd. 176
Drouve, G., Co. 159
Durant Mfg. Co. 190
Dyer, W. E. S. 162

Eastman Machine Co.
Outside Back Cover
Easton & Burnham Mchy. Co.. 184a
Eaton Rapids Woolen Mills 195
Economy Engineering Co. 172
Electro Bleaching Gas Co. 220
Elliott & Hall 176
Emerson Aparatus Co. ..... —
Eppler, John, Machine Works .. 173
Eureka Fire Hose Mfg. Co. 237
Evans Friction Cone Co. 209
Excelsior Needle Co. 239

Fairbairn, Lawson, Combe, Barbour, Ltd. 30
Fales, L. F. 235
Fales & Jenks Machine Co. .. 184a
Farbwerke-Hoechst Co. 215
Fawcett, Hughes 188
Felton, S. A., & Son Co. 206
Ferguson, John W. 162
Firsching, Joseph A. 237
Follett Time Recording Co. 172
Ford, J. B., Co. 178
Foster Machine Co. 4
Friedberger-Aaron Mfg. Co. 222

Gandy Belting Co. 43
Garland Mfg. Co. 146
Geisenheimer & Co. 213
General Electric Co.
Inside Back Cover
Gerry, Geo. W., & Son ..... —
Giles Dyeing Mch. Co., John H. 39
Globe Dye Works Co. 212
Goulds Mfg. Co. 34
Graton & Knight Mfg. Co. 21
Grosser Knitting Machine Co. .. —

Hall, Amos H., Son & Co. 219
Hall, I. A., & Co. 198
Halton's, Thomas, Sons 38
H. & B. American Machine Co. 50
Harding & Fancourt, Inc. 164
Hartwell, Geo. E. 164
Heard-Smith & Tennant 162
Heathcote, John, & Son 45
Hemphill Mfg. Co. 225
Hepworth, John W., & Co. 231
Hill, James, Mfg. Co. 40
Hodgson, Walter W. 176
Home Bleach & Dye Works 212
Home Insurance Co. 203
Hood, R. H., Company 176
Hopkinson Dyeing & Textile Works 212
Hungerford & Terry 221
Hunt, Rodney, Machine Co. 41
Hunter, Jas., Machine Co. 14
Hussong Dyeing Machine Co. .. 40
Hyde, Edward S. 188

India Alkali Works 176
Industrial Tape Mills Co. 188
Innis Speiden & Co. 219
International Cor. Schools 238
International Filter Co. 213
International Pulp Co. 206
International Steam Pump Co.. —
International Time Recording Co. 35
Ives, L. T., Co. 239

Jamieson, J. B. 194
Jefferson, Edw., & Bro. 194
Jenckes Knitting Mch. Co. 232
Jenckes Spinning Co. 188

Johns-Manville Co., H. W. 43
Johnson, Chas. A., & Co. 212

Kalle Color & Chemical Co., Inc. 216
Kaumagraph Company 176
Keever Starch Co. 202
Kemp, C. M., Manufacturing Co. 16b
Kenyon, D. R., & Son 151
Keystone Latch Needle Co. 239
Kissel Motor Car Co. 28
Klauder-Weldon Dyeing Mch. Co. 146
Klipstein, A., & Co. 213
Krout & Fite Mfg. Co. 197
Kunze, Otto 195

Lamb Knitting Machine Co. 223
Lambeth Rope Corporation 187
Lane, W. T., & Bro. 25
Lees, James, & Sons Co. 194
Leffel, James, & Co. 240
Leigh & Butler 6
Leighton Machine Co. 232
Lever, Oswald Co., Inc. 13
Leland, Thomas, & Co. 17
Lindsay, Hyde & Co. 187
Littauer, Ludwig 198
Little, Arthur D., Inc. 163
Lorimer's, Wm. H., Sons Co. .. 212
Lowell Crayon Co. 188
Lowell Textile School ..... —
Lunkenheimer Co. 156

Macungie Silk Co. 198
Main, Chas. T. 163
Malt-Diastase Co. 220
Manufacturers Machine Co. 44
Mason Brush Works ..... —
Mason, F. E., & Son 173
Mason Machine Works 8
Maurer, F. W., & Sons Co. 188
Merrow Machine Co. 222
Merwin Paper Co. 186
Metallic Drawing Roll Co. 209
Mindlin & Rosenman 199
Mitchell Co., Jas. E. 187
Montgomery, J. R., Co. 186
Monument Mills 186
Moore, C., & Co. 187
Morse Chain Company 27
Munn & Co. 163
Myrick, J. W. H. 162

National Credit Co. 182
National Laundry Mchy. Co. ... 214
National Scale Co. 35
National Silk Dyeing Co. 196
New Bedford Textile School 239
New England Butt Co. 234
New Eng. Tank & Tower Co. .. 221
New Process Gear Corporation.. 23
N. Y. & N. J. Lubricant Co. ... 207
New York Revolving Portable Elevator Co. 43
Nonotuck Silk Co. 186
Norwood Engineering Co. 221
Nye & Tredick Company 229

Orswell Mills 188

Pairpoint Corporation, The 156
Palmer, I. E., Co. 42
Paramount Metal Form Drying Co. 30
Parks, G. M., Co. 10-11
Paxton & O'Neill 230
Payne, Geo. W., Co. 236
Pearson, Jos. T. 228
Peerless Company, The 212
Perkins, B. F., & Sons, Inc. 36
Permutit Co. 182
Pettes & Randall Co. 195
Philadelphia Drying Mchy. Co.. 16a
Philadelphia Textile Mchy. Co.. 240
Philadelphia Textile School 43
Pohl Machine Co. 198
Porter, T. J., & Sons 188
Potter & Johnston 184a
Powell, Wm., Co. 42
Power Specialty Co. 211

Ramie Agency 188
Reece Button-Hole Machine Co. 231
Reeves Pulley Co. 36
Reliance Machine Works 32-237
Rice, Barton & Fales Machine & Iron Co. ..... —
Richardson Bros. 216
Ridgway, Craig & Son Co. 180
Riley, C. E., Company 145
Roessler & Hasslacher Chemical Co. 190
Rolker, F. 198
Root, C. J., Co. 40
Royersford Fndry. & Mch. Co.. 29
Rundle-Spence Mfg. Co. 39
Ryle, William, & Co. 198

Saco-Lowell Shops 5
Saginaw Mfg. Co. 173
Salem Elevator Works 33
Sanitex Co., The 176
Sargent's, C. G., Sons Co. 12
Sauquoit Silk Mfg. Co. 198
Scaife, W. B., & Sons Co. 213
Schaum & Uhlinger, Inc. 29
Schieren, Chas. A., Co. 26
Schofield, William, Co. 172
Schwartz, L. H. A., & Co. 24
Scott, Henry L., & Co. 36-159
Scott & Williams, Inc. 170
Sellers, Wm., & Co. 33
Seydel Manufacturing Co. Outside Back Cover
Shirley, Harold R. 194
Shoemaker, J. L., & Co. 236
S. K. F. Ball Bearing Co. 31
Smith, Alexander, & Son 198
Smith, Drum & Co. 28
Smith & Furbush Mch. Co. 192
Somerville Machine Works 24
Spence & Rideout 238
Spindler, E. O. 230

Stafford Co., The ..... —
Stafford & Holt 233
Standard Fibre Co. 37
Standard Machine Co. 237
Stearns, A. T., Lumber Co. 220
Steel Heddle Mfg. Co. 209
Stein, Hirsch & Co. 216
Stephenson Mfg. Co. 42
Sternberg, Fred, & Co. 187
Street, J. F., & Co. 187
Sturtevant, B. F., & Co. 149
Suter, Alfred 182
Sykes, Walter F., & Co. 216

Tatham, William, Ltd. ..... —
Taunton-New Bedford Copper Co. 176
Tebbets, E. L., Spool Co. 174
Textile-Finishing Machinery Co. Inside Front Cover
Textile Machine Works 234
Thayer, Edward M., & Co. 216
Thompson, Lindsay, & Co., Ltd. 188
Tolhurst Machine Works 38
Tompkins Bros. Co. 236
Torsion Balance Co. 190

Uniform Dyeing Machine Co. .. —
Union Button Sewing Co. 234
Union Special Machine Co. 228
United States Conditioning & Testing Co. 198
U. S. Gutta Percha Paint Co. .. 9
U. S. Hoffman Co. 37
Universal Winding Co. Outside Back Cover
Utica Willowvale Bleaching Co. 202

Van Noorden, E., & Co. 211
Villa, A. P., & Bros. 200
Villa, Stearns Co. 197
Virus Limited, Inc. 208

Walther, Otto 227
Wardwell Needle Co. 239
Watchman's Clock & Supply Co. 176
Weimar Bros. 183
Westinghouse El. & Mfg. Co. .. 19
Whitinsville Spinning Ring Co.. 45
Whitman, William, Co. 194
Whiton, D. E., Machine Co. 211
Wildman Mfg. Co. 224
Willcox & Gibbs Sewing Machine Co. 226
Williams, I. B., & Sons ..... —
Wing & Evans, Inc. 217
Wolf, Jacques & Co. 219
Woolford, G., Wood Tank Mfg. Co. 220
Woonsocket Mch. & Press Co.. 184a
Worden Chemical Works 176
Worthington, Henry R. ..... —
Wright Wire Co. 151
Wrisley, Allen B., Co. 213

Henry L. Scott & Co.

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That they are prepared to make

Immediate Deliveries

from stock, of their

Government Type

Hand Cloth Testers

Address

223-33 Eddy St., Providence, R. I.

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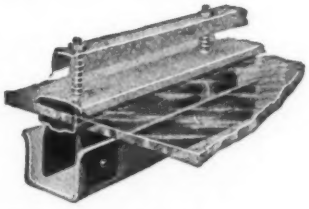

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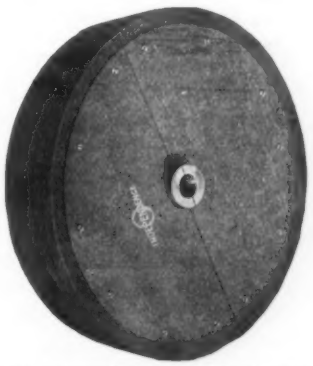


Dodge Independence Split Wood Pulley—Disc Type

Is Your Mill Equipped to Prevent Accidents?

ACCIDENT prevention is the talk of the industrial world. Law makers and insurance companies are constantly agitating and insisting that factory workers be better protected. The power user, naturally, is demanding in his purchases, machinery and appliances that will put him and his men on the safe side. The Dodge line is strictly in keeping with the times and the requirements. The application of the Veneer Disc to the sides of the Dodge Wood Split Pulley makes their operation absolutely safe in all exposed places. Its use is also desirable where the air is filled with dust, fibre or lint. Put your transmission needs up to the Dodge engineers. Safety bulletins may be obtained for the asking.

Dodge Sales & Engineering Company

Distributor of the Products of the

Dodge Manufacturing Company

Transmission Machinery for Textile Mills

Mishawaka, Indiana

Branches and Agencies in All Principal Cities

Publishers' Page

A Reflection of Confidence

Advertising is usually a reflection of confidence, so it is significant that again in this issue, as in the last three numbers of the Textile World Record, we can record more orders, as follows: Four from new advertisers; three from advertisers who were sometime ago compelled to discontinue but have now resumed their advertising; and also orders for increased space from three of our regular advertisers.

Our subscribers profit by this too as these advertisers all have something of value to offer to textile mills.

Unnecessary Litigation Avoided

[The average yarn number was adopted by Congress as a basis for the cotton cloth tariff on the recommendation of the Textile World Record. The following letter is an acknowledgment of valuable information on the subject received from the Textile World Record.]

Philadelphia, Dec. 5, 1914.

Mr. Samuel S. Dale, Editor.

Dear Sir:—We thank you for your very explicit explanation of 4th inst. regarding average yarn number of cotton cloth; this will enable our clients to avoid unnecessary litigation. Yours respectfully,

F. B. Vandegrift & Co.

Reading a Necessity

No matter who or what you are, whether a carrier of hods or of great enterprises, you can't reach the flush of success or feel that you are fully rounded out, without the help of good reading.

True, the printed page can't take the place of experience, but he who knows only what he has seen is woefully ignorant.

Neither the book, nor the paper, nor experience, by itself alone, is sufficient. You need all of them.

Emphatically I should advise you to read your trade papers, including the advertisements. Even the poorest trade journal contains matter of consequence to you. In no other way can you easily follow the movements of your trade, business or profession. —Nathaniel C. Fowler, Jr.

Prize Definition of Advertising

The Pompeian Company recently awarded a prize of $25 to Mr. W. I. Hamburger of Hochschild, Kohn and Company, Baltimore, for the following definition of advertising:

"Advertising—the force which enables the modern business man to disregard the distance between himself and his prospective customers.

"The force which gives him a million eloquent tongues with which to tell his business story to the world.

"The force which enables him to create new desires, and to point out new ways of supplying old needs.

"The force which, properly directed, will make a worthy business prosper, but which, no matter how cleverly applied, cannot give permanence to an enterprise founded on falsehood.

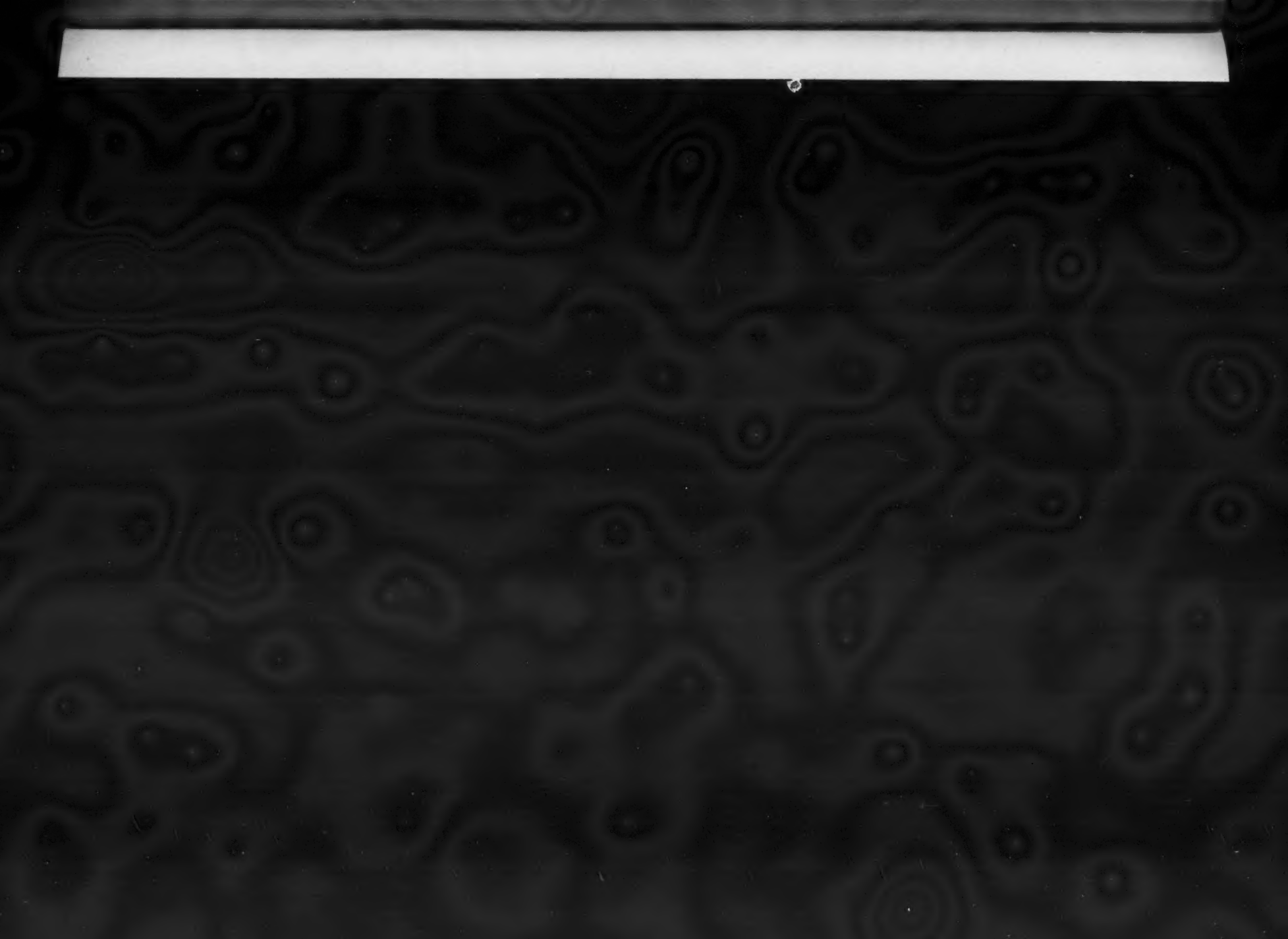
"The force by which a business may be built or wrecked, and which, in the last analysis, brings to him who uses it just that measure of success that his efforts deserve.

"Advertising—the force which has transformed the parlor melodeon into a pianola, the cracker barrel into an Inner Seal package, the crane over the hearth into a fireless cooker, and everything else in the world in like degree."

Monthly Circulation Statement

Of this edition over 6,200 copies are printed and all are needed.

The Textile World Record is a Member of the Audit Bureau of Circulations.



Advertising and Costs

In the American Paint and Oil Dealer O. C. Harn, of the National Lead Co., New York, is quoted as saying:

"It is such a foolish thing to say that advertising increases the cost of things that one can hardly see how business men ever advance the argument. All business grows by increasing the selling expense a little in order to increase the business much. Advertising is simply such a selling expense.

"Supposing a shoe dealer pays $1,500 a year rent for a little store on a side street and by selling shoes at $5.00 a pair makes $3,000 a year clear. He has depended entirely on his windows to attract people into his store, and he observes one day that a great many more people pass the stores on Broadway than pass his store. He decides to move to Broadway, though his rent is doubled thereby. His windows are seen by so many more people now that more trade comes and he now has enough gross business to pay the increased rental and leave him $5,000 clear profit.

"Does the increased rental compel a raising of his price on each pair of shoes? On the contrary he could lower that price and often he does.

"Take the next step. Seeing that increased net profit comes from increasing gross selling expense in such a way that gross business is increased in greater ratio, our shoe man looks about for a way to bring his store before the eyes of even more people.

"He can't show his goods to more people by means of windows. He already is on Broadway. He decides to tell about his shoes to those who do not pass his store. He uses printers' ink to do it; and that is advertising. Again his total business is increased so that he pays for the advertising out of the increase and has a lot left to add to his net profits.

"Does he have to add to the price of shoes to pay his advertising bills? Not any more than in the case of the increase in rent.

"It is the same with the manufacturer. He increases his total output greatly by means of increasing his selling expense slightly."

Geo. A. Townsend, Jr., of S. F. Bowser & Co., Fort Wayne, is quoted as follows:

"Ultimately, the consumer 'pays' for the advertising. But the wider the distribution of an article, the greater the number manufactured, with the result that the consumer's price is constantly lowered. Therefore, an advertised product that possesses merit is sooner given to the consumer and at a less cost than he would have to pay if that product was never advertised.

"Take, for example, our paint dealer's oil equipment. To manufacture just one equipment or a limited number, if they only could be sold through personal solicitation without paving the way through advertising, would make the price prohibitive. By advertising this equipment and educating the paint and oil dealer as to its saving and increased profits, we manufacture for a wider distribution, with the result that many are sold where, without advertising, few would be."—Printers' Ink.

—÷—

"A Splendid Help in Two Ways"

Textile World Record, Boston, Mass.

Dear Sirs:—While writing you, I wish to express the pleasure we receive in reading your Textile World Record. We find it a splendid help and furthermore look upon your advertising pages as an index to the best manufacturing concerns.

Yours truly,

The Nova Scotia Underwear Co., Ltd.

A. Ballantyne, Gen. Mgr.

—÷—

The Standard of Textile Trade Magazines

Messrs. Lord & Nagle, 144 Congress St., Boston, Mass.

Enclosed you will please find P. O. money order for two dollars ($2.00) as remittance for renewal of my subscription of the Textile World Record for 1914. I desire to say that I still find your publication to be the standard of textile trade magazines. Wishing you a bright and prosperous Happy New Year, I am, George H. Davis.

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BOSTON, MASS.

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Inventor of the
Autoforce Ventilating System
Largest Textile Ventilating Engineers in America
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Laboratory Manual of Dyeing and Textile Chemistry—*Matthews.*

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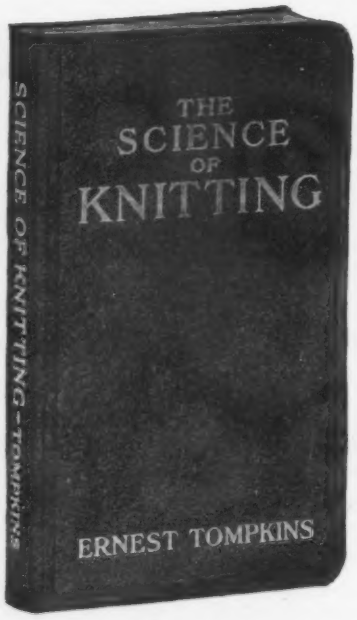

The Science of Knitting

BY
ERNEST TOMPKINS

330 Pages, Illustrated *Price $3.00 Postpaid*

Some of the contents are—

Yarn Numbering and Calculations; Elements of Knitting; Formulas for Ribbed Fabrics; Width of Tubular Goods for Different Numbers of Needles and Yarns; Width of Fabrics from Different Machines; Production of Circular Knitting Machines; Weight of Goods; Twist in Knit Fabrics; Set; Space Allotment in Knitting Mills; Knitting Machine Gauges; Range of Fabrics from the Same Gauge or Cut; Burs; Spring Needle Latch Wheel Tuck Stitch Figures; Vertical Patterns in Latch Needle Work; Cams; Inserting Needles in Ribber; Take-Up; Locating Source of Trouble in Knitting; Designing with Pattern Wheels; Theory of Knit Fabrics; Ratio and Proportion; Weights and Measures; Mensuration; Miscellaneous Notes on Belting; etc.

In addition there are 60 illustrations and 75 tables of yarns, fabrics, machinery and productions.

The volume is of convenient size, is a model of typographical arrangement, well printed and bound in blue leather with gold lettering.

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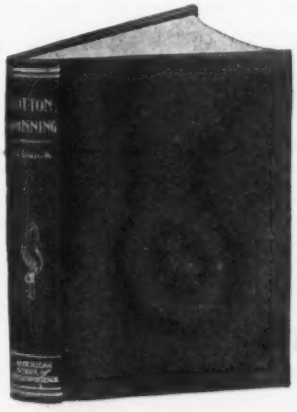
93 Broad Street - - - Boston, Mass.

Cotton Spinning

By
CHARLES C. HEDRICK



An advantage of this book is its treatment of American machinery. In the matter of clear illustration of the working of cotton opening and picking, carding, combing, drawing and spinning machinery, it has never been surpassed. Complete calculations. 300 pages; 240 illustrations; half leather binding.

Price $2.25. Express prepaid

Lord & Nagle Co., 144 Congress Street
Boston, Mass.

Textile and Industrial Plants

¶ This organization renders expert engineering service in connection with all industrial engineering problems.

¶ Plans and specifications are prepared for the erection and complete equipment of textile mills and other industrial plants, including steam and hydraulic power plants.

¶ The reorganization of textile and industrial plants is a highly developed function of this concern.

¶ A wide experience in the examination and survey of water powers, power plants and manufacturing and other plants is utilized in the preparation of special reports, with reference to the improvement or valuation of such properties.

CHARLES T. MAIN
Mill Engineer and Architect
201 Devonshire St., Boston, Mass.

4-22

PATENTS

If you have an invention which you wish to patent you can write fully and freely to Munn & Co. for advice in regard to the best way of obtaining protection. Please send sketches or a model of your invention and a description of the device, explaining its operation.

All communications are strictly confidential. Our vast practice, extending over a period of nearly seventy years, enables us in many cases to advise in regard to patentability without any expense to the client. Our Hand-Book on Patents is sent free on request. This explains our methods, terms, etc., in regard to ***Patents, Trade Marks, Copyrights,*** etc.

All patents secured through us are described without cost to the patentee in the *Scientific American*

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This is a special department for those who wish to buy or sell second-hand machinery, mills or mill sites, patents, etc., and for such advertisements as "Help" or "Situations Wanted." A special low rate is charged, viz., $1.00 for one-half inch, single column; $2.00 for one inch, single column, and in the same proportion for larger space. By measuring these advertisements and counting the words you will see what space is needed for your announcement. No advertisement accepted for less than $1.00. Remittance should accompany the order. No extra charge for forwarding replies sent in care of the Textile World Record.

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As Wadding Mill Manager

Any Company thinking about going into the Wadding business will find it of interest to consult me first. I have had fifteen years experience with Independent Wadding Companies in Massachusetts, Rhode Island, Tennessee, Alabama and Georgia. I have all the plans and specifications to start a Wadding Mill from the foundation of the building to the manufacturing of the finished product, and can furnish the very best of references. For further information address, George M. Miller, 616 Smithfield Ave., Saylesville, R.I.

Knitting Mill Position Wanted

Superintendent of knitting mill or would consider position as overseer of knitting in large knitting mill. Ten years experience in hosiery and underwear, sixteen years in one knitting mill as designer and overseer of knitting rubber linings, jersey, arctic, eiderdown, boucle, astrakhan, chinchilla, fleeces, buffalo robe, plush, sweater and glove fabric, all kinds of plain and fancy knit goods made on spring needle circular knitting machines and the finish of same, familiar with automatic stripers for bathing suits. Good reference. Address "Park," Textile World Record, Boston, Mass.

Wanted---Second Hand Machinery

For manufacture of Cotton and Jute Batting Garnett Machines, Jute Picker, Carpet Shredder, Kitson Lapper, Lumper, Duster, Blamire Lap Machine, Sullivan Baling Press, and Platform Scale and Truck. Please send descriptions and lowest prices for cash.

L. BRODERICK - - Hudson, Mass.

Valuable Mill Property

FOR SALE

Three-story frame building with annex. Size of rooms about 57x26x10 first, second and third floors, annex 36x14x10, office 14x16x8. Lot about 119x260. Fitted up with 20 of the latest improved machines for making turkish towels and with room for 20 more machines in same building. Heated by steam, lighted by electricity. Everything new. No cost for power—ample supply of water. Room on property for five more buildings if they are needed. Plenty of local help. Will be sold low to a quick buyer. Address A. J. Ogden, Bridgeton, N. J.

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(Woolen, Worsted and Union)

BY THE EDITORS
OF
"THE DYER AND CALICO PRINTER"

IN THIS work, the processes and machinery are described not merely from a knowledge of the routine, but from actual working experience. The matter consists largely of hints on the easiest and best of many methods of obtaining the same results.

The fact that cloth finishing processes have altered largely in recent years, together with the scarcity of published information on the subject, makes the work valuable alike to beginner and expert.

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Economy in Selling

As we have so often said these "Wants, For Sale" pages of the Textile World Record seem to be the logical place for the advertising of second-hand machinery, because this publication carries more advertising of machinery than any other textile periodical.

The Sauquoit Silk Mfg. Co., of Philadelphia ran a small advertisement advertising Camless Coners in the Textile World Record and when we wrote them regarding the continuance of the advertisement they replied as follows:

January 29th, 1915
Lord & Nagle Co.
Dear Sirs:—Your favor of the 28th inst. received and would ask you to discontinue the advertisement regarding Camless Coners for the time being. We have already sold two of these, with a prospect of selling the other three. However, should this fall through we will re-advertise in the near future.
Congratulating you on the results we obtained from this advertisement, we remain,
Yours very truly,
Sauquoit Silk Mfg. Co.

When you have any second-hand machinery, equipment or supplies not in use do not store it away—for then it represents just so much idle capital on which you are losing interest. Turn the machinery into cash.

An advertisement in the Textile World Record will, in all probability, locate a buyer for you.

If you want more information on this point ask for "Who Are the Real Buyers."

Address "Want Ad" Department.

Textile World Record
144 Congress St., Boston, Mass.

Situations Wanted

Manufacturers who are in need of Superintendents or Overseers for any department of mill work may learn of suitable men upon application by mail or telephone to C. T. DONLEVY, care Textile World Record, 144 Congress Street, Boston., who will give prompt attention to their requirements without charge.

Mule Fixer in woolen mill; has worked on shoddy and cotton mixes; all wool and cotton waste from 1/2 to 7 run; familiar with Davis & Furber, Johnson & Bassett jacks and mules; 37 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6369, Textile World Record, Boston, Mass.

Superintendent in cotton mill; has worked in both cloth and yarn mills on all kinds of cotton, all lengths of staple and all numbers both carded and combed; familiar with both American and English makes of machinery; 41 years of age, married; will not go South; good reference.
6370, Textile World Record, Boston, Mass.

Overseer of Dyeing; has worked on cottons and worsteds, all worsteds, unions, cross dyes, worsted yarns, long and short skein cotton, raw stock, cotton yarns, piece dyes and resist yarns; familiar with all kinds of warp and worsted dyeing machinery; 45 years of age, married; will not go West or South; good reference.
6371, Textile World Record, Boston, Mass.

Overseer of Knitting; has worked on ladies' and men's underwear from latch and spring needles; sweaters from power machines and jerseys, bathing suits, Swiss and Richelieu ribbed goods; familiar with Scott & Williams and other latch needle machines; Tompkins and other spring needle machines; 38 years of age, married; will not go West or South; good reference.
6372, Textile World Record, Boston, Mass.

Boss Carder in woolen mill; has worked on wool and shoddy; familiar with any make of cards; 46 years of age; good reference.
6373, Textile World Record, Boston, Mass.

Superintendent, manager, purchasing agent, secretary or treasurer of knitting mill; has worked on ladies' ribbed underwear, sweaters, hosiery, cotton yarn, ring and mule, 84-176 needle hosiery; familiar with McMichael & Wildman, Scott & Williams, Standard, Banner, Geo. D. Mayo, Schneider & Fisher machines; 34 years of age; has had years of experience in purchasing; good reference.
6374, Textile World Record, Boston, Mass.

Master Mechanic; would accept any good mechanical or electrical position; has worked on cotton and velvet machinery; engines; pumps; electrical equipment; power machinery; general repairs in different repair shops; 30 years of age, married; will not go to Pa., N. J., West, South or to Canada; good reference.
6375, Textile World Record, Boston, Mass.

Boss Weaver in woolen mill; has worked on all kinds of mohairs, dress goods, linings and cloths to be rubbered; plain and fancy worsted piece dyes, light men's wear and cotton worsteds; familiar with English, Crompton and Knowles looms; 23 years of age, married; will not go West or South; good reference.
6376, Textile World Record, Boston, Mass.

Assistant Superintendent or assistant designer in woolen mill; has worked on both woolen and worsted fabrics of all kinds; familiar with English system worsted spinning machinery including carding, scouring, drawing and combing; Davis & Furber cards and mules; Crompton, Knowles, Draper, Stafford, Knowles roller and Crompton roller looms; 22 years of age; good reference.
6379, Textile World Record, Boston, Mass.

Overseer of Worsted Drawing or spinning; has worked on merinos, crossbreds and long luster wools, alpaca, mohair and mixtures, anywhere up to 60s spinning counts, also knitting yarns; familiar with all makes of drawing, spinning and twisting machinery; 23 years of age, married; good reference.
6380, Textile World Record, Boston, Mass.

Master Mechanic or would consider first class position as engineer; has worked on cotton, woolen and print yard machinery; also understands D. C. and A. C. motors and generators; has a first class Massachusetts engineer's license; 30 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6377, Textile World Record, Boston, Mass.

Assistant Designer in woolen mill; has worked on cassimeres, satinets and meltons; familiar with dryers, extractors, dyeing kettles, presses, shears, mixes, measuring and carding machinery; 21 years of age; will not go to Mass., R. I., Conn., N. H., or Vt.; good reference.
6378, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on all kinds of goods, both woolens and worsteds, also women's wear; familiar with all kinds of machinery; 50 years of age, married; will not go to N. J. or Canada; good reference.
6381, Textile World Record, Boston, Mass.

Assistant Superintendent or overseer; has worked on all classes of wool and mohair, white and colored; familiar with open and cone drawing; ring, flyer and cap spinning; twisting and a good knowledge of all combing; 31 years of age, married; good reference.
6382, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; has worked on satinets and woolens of all kinds; familiar with Davis & Furber, Cleveland, Furbush, Lombard and condensers; 50 years of age, married; good reference.
6383, Textile World Record, Boston, Mass.

Chemist or assistant superintendent of cotton piece goods finishing plant; has worked mostly on cotton piece goods; 50 years of age, married; good reference.
6384, Textile World Record, Boston, Mass.

Boss Finisher in woolen mill; has worked on all classes of woolens, worsteds and cotton worsteds; familiar with most all makes of machinery; will not go West, South or to Canada; good reference.
6385, Textile World Record, Boston, Mass.

Boss Dyer in woolen mill; has worked on woolens, worsteds and cotton mixed goods; 34 years of age, married; will not go to N. Y., N. J., West, South or Canada; good reference.
6386, Textile World Record, Boston, Mass.

Boss Weaver in cotton mill; has worked on plain, fancy and silk goods; duck cloth, leno work, in fact all makes of goods; familiar with Crompton & Knowles, Whitin, Colvin, Draper and jacquard looms; has a technical as well as practical knowledge; 35 years of age, married; will not go to Pa., West, South or Canada; good reference.
6387, Textile World Record, Boston, Mass.

Boss Carder in woolen mill; has worked on all kinds of goods from the cheapest to the best; familiar with Lombard, Cleveland, Davis & Furber, Furbush and English cards; 37 years of age, married; will not go to N. H.; good reference.
6388, Textile World Record, Boston, Mass.

Superintendent cotton cloth or yarn mill; superintendent worsted yarn spinning or overseer of cotton spinning; has worked on fine and coarse cotton yarns; coarse and fine stocks in worsted yarns; familiar with Whitin, Hetherington, Saco & Lowell cotton machinery; Lowell, Prince & Smith worsted machinery; 47 years of age, married; will not go to Pa., N. J., West, South or to Canada; good reference.
6389, Textile World Record, Boston, Mass.

Boss Weaver in cotton mill; has worked on cotton blankets; familiar with Crompton & Knowles blanket looms; 38 years of age, married; will not go to Pa., N. J., or South; good reference.
6390, Textile World Record, Boston, Mass.

Superintendent of yarn mill; has worked on hosiery yarns; familiar with Mason, Whitin, Saco & Pettee, Woonsocket and Kitson machines; 34 years of age; good reference.
6391, Textile World Record, Boston, Mass.

Cloth Examiner on finished goods; has worked on high and low grade woolens, worsteds, satinets, etc.; familiar with finishing room machinery; 25 years of age; will not go to Conn., Me., N. H., Vt., N. J., West, South or to Canada; good reference.
6392, Textile World Record, Boston, Mass.

Designer or superintendent in woolen mill; has worked on woolen and worsted fine suitings; trouserings, woolen and worsted overcoatings, plaid backs, also fine worsted men's wear; familiar with Crompton & Knowles looms; has a general knowledge of machinery of the various departments of a woolen or worsted mill; will not go to Pa., N. Y., N. J., West, South or to Canada; 27 years of age; good reference.
6313, Textile World Record, Boston, Mass.

Overseer of ring or mule spinning in cotton mill; has worked on filling yarn from 6 to 50; hosiery yarn from 4 to 36; familiar with Mason, Platt and Asa Lees mules; Whitin, Mason, Lowell, Howard & Bullough ring frames; 48 years of age, married; will not go to Pa., N. J., West, South or to Canada; good reference.
6277, Textile World Record, Boston, Mass.

Master Mechanic; has worked on all kinds of worsted and woolen machinery; both vertical and horizontal tubular boilers; engines both Corliss and slide valve; pumps; both A. C. and D. C. motors and generators; 33 years of age, married; will not go West or to Canada; good reference.
6348, Textile World Record, Boston, Mass.

Master Mechanic; has worked on all makes of cotton and worsted machinery; 44 years of age; married; will not go to Pa., N. J., West or South; good reference.
6349, Textile World Record, Boston, Mass.

Overseer of Dyeing or bleaching in cotton mill; has worked on cotton piece goods, dress goods, lawns and bunting; familiar with jigs, padders, reds, clarets and indigo dyeing; 26 years of age; will not go West, South or to Canada; good reference.
6350, Textile World Record, Boston, Mass.

Superintendent of small woolen mill; would consider position as assistant superintendent of large mill; has worked on all classes of Scotch tweeds, fancy vestings, jacquard work, all wool white blankets, also shoddy grey blankets, steamer rugs, large variety of double cloth cloakings, basket cloth, worsted trouserings and suitings, mackinaws, blanket cloths, fancy homespuns, etc.; familiar with all the leading English makes of machinery; 32 years of age; good reference.
6351, Textile World Record, Boston, Mass.

Designer, superintendent and designer of worsted mill; would consider position of salesman of mill supplies or worsted yarn; has worked on fine and medium fancy worsteds, men's wear also resist and cross dye worsteds; familiar with all worsted and woolen weaving and finishing machinery; 31 years of age, married; will not go South; good reference.
6352, Textile World Record, Boston, Mass.

Loom Fixer or boss weaver in woolen mill; has worked on all classes of goods; familiar with Crompton & Knowles looms; 49 years of age; married; will not go to N. J., West, South or to Canada; good reference.
6353, Textile World Record, Boston, Mass.

Designer in Woolen Mill; has worked on men's wear, woolen, shoddy and worsted; natural and piece dyes; is familiar with goods, bookkeeping and organization; familiar with different makes of machinery; 26 years of age; good reference.
6354, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on woolen, worsted and cotton; familiar with Knowles, Crompton and jacquard looms; 50 years of age, married; will not go West, South or to Canada; good reference.
6280, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on all kinds of woolen goods and wool, shoddy and cotton mixes; familiar with Davis & Furber, Lombard and Cleveland machines; 41 years of age, married; will not go West, South or to Canada, good reference.
6278, Textile World Record, Boston, Mass.

Moquette or axminster manager or boss weaver; has worked on axminster, chenille, jacquard and tapestry carpets; familiar with English and American machinery; 41 years of age, married; good reference.
6355, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on all grades of yarns and harding felts; familiar with Davis & Furber and Lombard machines; 37 years of age, married; good reference.
6356, Textile World Record, Boston, Mass.

Superintendent of worsted yarn mill; has worked on all kinds of worsted yarns for weaving and knitting; familiar with all makes of worsted machinery; 47 years of age, married; will not go West, South or to Canada; good reference.
6357, Textile World Record, Boston, Mass.

Boss Weaver; has worked on cottons, woolens, worsteds, both men's wear and dress goods; plain and fancy; asbestos, textiles and packings; familiar with Knowles, Crompton & Thayer or Schaum & Uhlinger looms; 32 years of age, married; will not go to Canada; good reference.
6358, Textile World Record, Boston, Mass.

Overseer of Carding and combing in cotton mill; has worked on carded and combed Sea Island and Egyptian cotton from 40s to 150s ring and mule spun; American reelers from 20s up for both hosiery and sewing thread and crocheting trade; familiar with Saco, Lowell, Howard & Bullough, Whitin, Hetherington, Platt, Dobson & Barlow, Woonsocket, Potter & Johnson machines; 32 years of age, married; good reference.
6359, Textile World Record, Boston, Mass.

Overseer of Woolen Carding; has worked on cloakings, overcoatings, dress goods, flannels, shirtings and hosiery yarns; familiar with Davis & Furber, Lombard, Cleveland, Smith and Tainter machines; 30 years of age, married; will not go to Me., Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6360, Textile World Record, Boston, Mass.

Assistant Designer or superintendent in a cotton or woolen mill, either jacquard or dobby work; would accept position in a wholesale woolen house; familiar with cotton and woolen calculations, also analytical work; 25 years of age; Philadelphia Textile School graduate; experience considered before salary; good reference.
6361, Textile World Record, Boston, Mass.

Repair Man in mechanical department; 35 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6362, Textile World Record, Boston, Mass.

Overseer of Woolen Spinning; has worked on all kinds of mixes and waste, both cotton and woolen, also silk; familiar with Davis & Furber, Johnson & Bassett and James Smith machines; 38 years of age; married; good reference.
6363, Textile World Record, Boston, Mass.

Overseer of Spinning in worsted yarn mill; has worked on worsteds and jute; familiar with all worsted machinery of Bradford system and all jute machinery; 32 years of age, married; good reference.
6364, Textile World Record, Boston, Mass.

Master Mechanic or mechanical engineer; would like position where he would have the supervision of the mechanical construction, power transmission, ventilation and heating work; could design any special machinery required, improvements and attachments to present machinery; 30 years of age, married; will not go to Canada; good reference.
6365, Textile World Record, Boston, Mass.

Second Hand of Carding or boss comber in cotton mill; has worked on fine and coarse yarns; familiar with all Whitin card room machinery; Woonsocket speeders; Howard & Bullough, drawing and pickers; Dobson & Barlow and Kitson pickers and Hetherington cards; 21 years of age; good reference.
6366, Textile World Record, Boston, Mass.

Second Hand in finishing department in woolen mill; has worked on serge dress goods, serge and alpaca linings, also Palm Beach cloth; 30 years of age, married; will not go to Pa., West, South or to Canada; good reference.
6367, Textile World Record, Boston, Mass.

Assistant Superintendent in knitting mill; has worked on silk, cotton and woolen half hose and full fashioned hose, also ladies' ribbed underwear; familiar with all kinds of hosiery machinery and Scott & Williams underwear machinery; 22 years of age; good reference.
6368, Textile World Record, Boston, Mass.

Overseer of Carding in woolen mill; has worked on cassimeres, dress goods, cloakings, broadcloths, chinchillas, novelties, overcoatings, cap cloths, mohair cloakings and balmacaans; familiar with Davis & Furber, Smith & Furbush and Bridesburg machines; 33 years of age; good reference.
6281, Textile World Record, Boston, Mass.

Superintendent of cotton mill; would consider position as overseer of carding; has worked on coarse and fine yarns, both combed and carded, belt duck, sheetings, shirtings, muslins, fancies, etc.; familiar with Pettee, Howard, Bullough, Platt, Dobson & Barlow, Providence, Woonsocket, Mason and Whitin machines; 50 years of age, married; will not go to Canada; good reference.
6282, Textile World Record, Boston, Mass.

Overseer of dressing, spooling, twisting, etc., in woolen mill; has worked on woolen worsted and cotton mixed goods, suitings, cloakings, men's wear, fancy twist yarns, etc.; familiar with Davis & Furber dressers, spoolers and twisters; 33 years of age, married; will not go to Vt., Pa., N. J., West, South or to Canada; good reference.
6283, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on all kinds of woolens and worsteds; familiar with all kinds of machinery; has had considerable experience on dyeing also; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6308, Textile World Record, Boston, Mass.

Overseer of Dressing in woolen mill; would take charge of spooling, winding and twisting; has worked on worsteds, woolens, cottons and all classes of goods; familiar with Davis & Furber, Cleveland and all makes of dressing and spooling machines; Collins Bros. twisters and skein winders; 26 years of age, married; good reference.
6174, Textile World Record, Boston, Mass.

Overseer of Warping, spooling, slashing, drawing-in or on tying machines in cotton mill; has worked on all kinds of goods including fancy and auto goods; familiar with slashers, spoolers and warpers; 41 years of age, married; good reference.
6175, Textile World Record, Boston, Mass.

Overseer of Spinning in cotton mill; has worked on all kinds of goods from 2s to 100s yarns, twisted also; familiar with Fales & Jenks, Saco, Lowell, Mason, Whitin, Howard & Bullough, and Draper machines; 27 years of age, married; will not go to Pa., N. J., West, South or to Canada; good reference.
5961, Textile World Record, Boston, Mass.

Overseer of Dressing, spooling and winding in woolen or worsted mill; has worked on fancy worsteds and piece dyes; familiar with Cleveland and Davis & Furber machines; 34 years of age, married; will not go to Me., N. H., Vt., West, South or to Canada; good reference.
5962, Textile World Record, Boston, Mass.

Manager or superintendent of hosiery mill; has worked on seamless and full fashioned hosiery; silk, cotton and wool for men, women and children; familiar with Banner and Acme knitters; Wildman, Scott & Williams ribbers and Hepworth and Beattie loopers; 43 years of age, married; good reference.
6055, Textile World Record, Boston, Mass.

Overseer of Finishing in woolen mill; has worked on all classes of goods; familiar with American makes of machinery; 37 years of age, married; will not go to Me., N. H., South or to Canada; good reference.
3503, Textile World Record, Boston, Mass.

Overseer of Spinning in woolen mill; has worked on all classes of goods; familiar with all makes of mules, but prefers Johnson & Bassett and Davis & Furber; 44 years of age, married; will not go to N. Y., N. J., West, South or to Canada; good reference.
6201, Textile World Record, Boston, Mass.

Superintendent of worsted yarn mill; has worked on worsted yarn, Bradford system for knitting and weaving, woolen yarns, shoddy mixtures, etc.; familiar with Prince, Smith, Hall, Stells, Farrar, Crompton and T. W. combs, Furbush cards, Sargent and Hunter washing machines; 40 years of age, married; good reference.
6202, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving; has worked on awnings, cottonades, tickings, denims, prints, lawns, sateens, etc.; familiar with Lowell, Mason, Whitin, Kilburn, Lincoln and Draper looms; 36 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6204, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on fancy cassimeres, worsteds, cotton dress goods, in fact almost every kind of fancy and plain goods; familiar with Knowles, Crompton, Greenhalgh and cam looms; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6205, Textile World Record, Boston, Mass.

Designer, assistant superintendent and designer in woolen mill; would consider position as overseer of weaving and designer also; has worked on cassimeres, dress goods, fancy woolens, plaid backs, chinchillas, etc.; 30 years of age, married; will not go to Vt., Pa., N. Y., N. J., West, South or to Canada; good reference.
6206, Textile World Record, Boston, Mass

Overseer of Carding in cotton mill; has worked on ginghams, denims and tickings; familiar with Saco, Lowell, Hetherington, Woonsocket and Whitin machines; 50 years of age, married; has a number of workers in family; good reference.
6207, Textile World Record, Boston, Mass.

Overseer of ring spinning, spooling, warping and twisting in cotton mill; has worked on cotton yarn from 5s to 100s, combed and carded; familiar with Whitin, Lowell, Mason, Draper, Howard & Bullough machines; 31 years of age, married; will not go to Pa., West, South or to Canada; good reference.
6208, Textile World Record, Boston, Mass.

Overseer of Weaving and designer in woolen mill or superintendent; has worked on dress goods, plaid backs, suitings, cassimeres, worsteds, plain and fancy, kerseys, coverts, cheviots, mackinaws, uniform cloths, astrachans and rugs; familiar with Crompton and Knowles looms; 46 years of age, married; will not go to N. J., South or to Canada; good reference.
6209, Textile World Record, Boston, Mass.

Overseer of Weaving in woolen mill; has worked on all kinds of woolen and worsted goods, men's suitings, overcoatings and cloakings; familiar with Crompton & Knowles looms, also some experience with cam looms; 40 years of age, married; will not go to Pa., N. Y., N. J., West, South or to Canada; good reference.
6210, Textile World Record, Boston, Mass.

Fixer in Knitting Mill; has worked on cotton and mercerized hosiery; familiar with Invincible and National machines; 26 years of age, married; good reference.
6211, Textile World Record, Boston, Mass.

Fixer or Foreman in knitting mill; has worked on wool, worsted, cotton and silk hosiery; familiar with Geo. D. Mayo, Acme, Mayo, Banner, Hemphill, Jenckes, Pigeon spring needle machines; Hepworth and Record loopers; Brinton and Wildman ribbers; 35 years of age, married; good reference.
6212, Textile World Record, Boston, Mass.

Cutting Dies

— FOR —

"Straight Line" Cloth Analysis

And Determining Average Yarn Number of Fabrics

The "straight line" method of cloth analysis has been used by us for years. It is equally well adapted for cotton, woolen, worsted or linen fabrics.

The value of this method is conclusively demonstrated by the fact that the U. S. Treasury Department has recommended it to Customs Collectors and Appraisers as the simplest method of determining the average yarn number on which the tariff on cotton cloth is based.

The sample having an area of 1/300th square yard (4.32 square inches) can be cut in any form desired. The rectangular die shown in the illustration is what we have found convenient.

For the convenience of the trade we have arranged to supply dies like this at **$5.00** each, express paid. This includes instructions for use.

Having cut a sample of cloth with this die and weighed it on an ordinary grain scale, calculations to obtain the following information can be quickly made for cotton, woolen, worsted or linen:

Average number of yarn: woolen runs or cut; worsted, cotton or linen number.
Number of each kind of yarn.
Grains per square yard.
Ounces per running yard.
Ounces per square yard.
Running yards per pound.
Square yards per pound.
Number of yarn when spun.

This method of calculation is invaluable for analyzing fabrics that are to be duplicated or imitated.

The United States appraisers and custom house officers will use a system based on similar data, and these calculations will be in constant use by importers who wish the know what the duty will be on cotton cloths imported, and by domestic cotton manufacturers who wish to ascertain what the duty will be on competing foreign goods similar to goods of their own manufacture. We do not supply the grain scales, but these may be bought of any supply house.

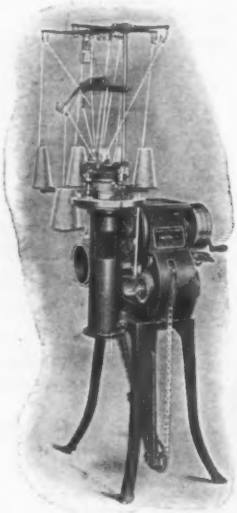
Textile World Record, 144 Congress St., Boston, Mass.

—OR—

Alfred Suter, 200 Fifth Avenue, New York

Here's the Machine that Saves 7 to 15 Cents a Dozen

On the Manufacturing Cost of Half Hose



IMPROVED MODEL F MACHINE

Is there an abundance of skilled labor for topping in your locality? If so, you are fortunate.

If not, you should **investigate our Model F Machine,** which produces half hose **without skilled labor** at a saving of from 7 to 15 cents per dozen, and makes women's stockings with a knitted turned welt, dropping both from the machine.

Established 1865

SCOTT & WILLIAMS, INC.

88 PEARL STREET
BOSTON

NEW YORK UTICA

KNIT.

Indiana, Goshen. An increase has been made in the capital stock of the Rock Run Mills from $75,000 to $100,000. They have recently installed new equipment and they are adding a new washing machine and additional knitting and sewing machine equipment. Woolen and worsted ribbed union suits are manufactured.

Michigan, Grand Rapids. A dyeing and finishing department for zibilenes and other pile fabrics is to be equipped by the Williams Glove & Gauntlet Company, 249 Pearl St. They manufacture astrachan cloth, eiderdown, buffalo fur cloth, gloves and mitten gauntlets.

Michigan, Grand Rapids. An addition is to be built to the plant of the Sanitary Knitting Company on account of increased business. Special order underwear is manufactured.

*New York, Brooklyn. About February 1 the Angora Specialty Company, manufacturers of fancy knit goods, sweater coats and similar goods, will remove their plant from 114 Berriman St. to the Bush Terminal Building at 87 34th St. It was noted recently that space had been leased.

New York, Fulton. The machinery which was used in the Parish, N. Y., branch of the W. H. Spanswick Mfg. Company has been moved to Fulton and put in operation. A storehouse will be erected so that the entire floor space in the main building, about 15,000 square feet, will be used exclusively for manufacturing and over 400 dozens daily of children's ribbed underwear will be manufactured. A new boiler house will be erected in the spring and possibly an extra boiler installed.

North Carolina, Connellys Springs. The Connellys Springs Knitting Mills Company expects shortly to add to its equipment. Men's and women's seamless hosiery is manufactured on present equipment of 60 knitters, 10 ribbers and 10 loopers. D. B. Mull is president, treasurer and buyer.

Ohio, Cleveland. A lot of land on E. 27th St., between Payne Ave. and Chester Ave., N. E., has been purchased by the Bamberger-Reinthal Company. The ground has a frontage of 380 feet and is 140 feet deep. Sol. Reinthal, treasurer of the concern, is quoted as stating that the purchase was made to provide for future developments and that a building may not be erected for some time. The Bamberger-Reinthal Company manufactures fancy knit goods, sweater coats, etc.

Pennsylvania, Parker's Landing. The Parker Woolen Mills intend to equip a small knitting plant in connection with their woolen yarn mill, installing 84-needle machines for men's half hose. Arthur A. Conn is treasurer and manager.

Pennsylvania, Philadelphia. George Bannister & Co., for many years located at 82 Armat St., where they manufactured fancy knit goods, skirts and golf vests, on 12 knitters and 15 sewing machines, have removed their plant to 5155 Wakefield St., where they have leased an entire floor and are now installing their equipment.

Pennsylvania, Philadelphia. Fred. Kaser & Co., 3557 to 3561 Sepviva St., manufacturing 176 and 220-needle men's and women's seamless hosiery on 100 knitters, 10 ribbers and 16 loopers, report an active business. They also state that they have in contemplation the installation of 50 additional knitters for the purpose of increasing their production. They sell direct.

Pennsylvania, Philadelphia. The Chatham Hosiery Co., formerly operated by Watt & Bro., at Trenton Ave. and Sergeant St., has been taken over by William Watt and removed to 2011 E. Arizona St., where he is operating 40 knitters on 220-needle women's cotton and mercerized hosiery and 12 ribbers on a line of misses' ribbed goods. New machinery has been added since the change in ownership.

Pennsylvania, Philadelphia. The Victor Hosiery Mills, 22nd St. and Glenwood Ave., manufacturers of knitted and cut silk neckwear, report being actively employed on both lines. They have increased their equipment to 17 knitters and 4 sewing machines. The production is sold direct.

Pennsylvania, Philadelphia. The Universal Hosiery Co., operating 20 full fashion frames on cotton, silk and lisle full fashioned hosiery, at 2nd and Norris Sts., have taken over another floor in the same building which they are equipping with a number of new machines to be run on the same line of goods.

*Prince Edward Island, Tryon. Nearly all of the machinery for the plant of Reid-Rayner Knitting Mills, Ltd., has been received and they expect to begin manufacturing within a month. The old Tryon Woolen Mills have been remodeled and rebuilt, and have been re-equipped to manufacture unshrinkable underwear and sweaters for men. The authorized capital stock is $36,000. B. I. Rayner is president; S. E. Reid, general manager and buyer; and C. A. Clark, superintendent. The equipment will include 2 sets of cards, 750 spindles, 9 knitting machines and 8 sewing machines.

*Utah, Ogden. The Utah Knitting Company is now settled in new quarters at 2340 Grant Ave., where there is room for further expansion of the business. The concern now has available floor space of 15,000 square feet. Sweater coats and underwear are manufactured, and the eventual extension into the hosiery branch of the business is anticipated.

Washington, Olympia. A small amount of new equipment has been added by the Olympia Knitting Mills, Inc., manufacturers of sweater coats and fancy knit goods. C. W. Maynard is the treasurer, superintendent and buyer.

Wisconsin, Appleton. Large orders received by the Fox River Valley Knitting Company have necessitated the immediate enlargement of the plant and the installation of 15 new machines. The addition is a new drying department with a capacity of 500 pairs of socks.

Wisconsin, Neenah. The manufacturing department of the Jersild Knitting Company was not damaged in the recent fire which destroyed a warehouse, and the plant is running as usual. The burned warehouse will be rebuilt in the spring.

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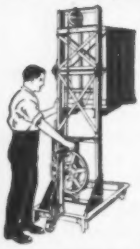

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COTTON.

Mills Starting Up.

Alabama, Prattville. The rope department of the Prattville Cotton Mills has been started up under the management of C. E. Thomas, an officer of the Alabama Bankers' Association, of Prattville, and is being run very successfully. The other departments have not yet been started, but they are arranging to put the plant in full operation at an early date with new management. G. L. Comer, of Eufaula, is president of the Alabama Bankers' Association. The Prattville Cotton Mills shut down nearly a year ago and last July the property was ordered sold by the court.

Maryland, Millington. The Queen Anne Cotton Company, which has been shut down for several weeks, is being started up. Dress goods, shirtings, etc., are manufactured.

*North Carolina, Charlotte. Manufacturing will be started about February 1 by the new Robinson Mfg. Company. This concern was organized a few months ago with authorized capital stock of $100,000, and acquired the old plant of the Charlotte Cordage Company. Operations will be started with 3,500 spindles, making 10s to 18s hosiery yarns, and using electric power. W. L. Robinson is president; W. A. Watson, treasurer, and W. E. G. Robinson is superintendent.

WOOLEN.

Oregon, Portland. The Portland Woolen Mills, a six-set plant, are running four sets and 20 looms every night, giving them the capacity of a ten-set mill. The plant is constantly being improved and enlarged.

Pennsylvania, Philadelphia. Alfred Wolstenholme & Son, incorporated with a capital of $800,000, succeeding Wolstenholme & Clarke, 24th St. and Allegheny Ave., have elected officers as follows: Alfred Wolstenholme, pres.; H. Sherwood Hicks, vice-president and sales manager; Hollis Wolstenholme, treasurer, and John Hawthorne, secretary. The plant, which now contains 19 cards, 15 combs and 30,000 spindles, which they operate on French spun worsted and merino yarns up to 75s, will be augmented by the opening up of a department for the spinning of worsted yarns on the Bradford system, the machinery for which they expect probably to install within the next six months. They sell direct to the weaving and knitting trades.

Pennsylvania, Philadelphia. The N. K. Regar Manufacturing Co., located at Coral and Adams Sts., where they are manufacturing worsted fabrics on 35 broad looms, have under consideration a plan to increase the equipment and probably remove to another and larger location.

Pennsylvania, Philadelphia. Dyson Brothers, recently mentioned by us as starting a plant in the Lomax Mills for the manufacture of men's wear worsteds, have increased their equipment to 18 broad looms which they are running on commission work.

WOOLEN.

.....

Mills Starting Up.

Connecticut, East Killingly. The local plant of the Davis & Brown Woolen Company is being made ready to resume operations after a period of idleness.

*Rhode Island, Hope Valley. The old plant of the Locustville Woolen Company is to be started up at once under the name of the Hope Valley Mills. Henry D. Bailey, who was president and superintendent of the old company, will be agent and buyer. They will manufacture lines of men's and women's woolens and worsteds.

Rhode Island, Woonsocket. In the course of about a week the Glenark Mill will be started up. The property was purchased several weeks ago by the Uxbridge (Mass.) Worsted Company. One floor has been equipped as a worsted yarn plant with 1,200 spindles, and drawing frames, later to be increased to about 35,000 spindles. The second floor has been leased to the Manchester Company, commission weavers, now located at the corner of Main and Bernon Street and the moving of its looms has been started. The third and fourth floors will for the present remain unoccupied, but Messrs. Bachman and Root of the Uxbridge Worsted Company are understood to have a plan for installing worsted looms on the third floor.

MISCELLANEOUS.

.....

Facts and Gossip.

California, San Diego. A knitting plant has been established in a building on Broadway, near 9th St., to manufacture sweaters and similar goods.

Canada, Ontario, Ingersoll. A hosiery knitting business is conducted here by Guyette & Marco.

Canada, Ontario, Toronto. The management of the Toronto Carpet Mfg. Company, Ltd., is considering installing knitting machines for the manufacture of sweaters.

*Canada, Ontario, Toronto. The plant of the May Mfg. Company, recently purchased by Best-Knit, Ltd., of Brampton, has been moved from Toronto to Brampton.

Canada, Quebec, Sherbrooke. A new York concern is reported to have taken up with the City Council a proposition to establish a silk hosiery, glove and underwear plant in Sherbrooke.

Canada, Quebec, Shawinigan Falls. It is stated that the Eagle Knitting Co., Ltd., of Hamilton, has acquired the plant and business of the Shawinigan Knitting Co., Ltd. It was rumored recently that the Shawinigan plant would be taken over by the Oxford Knitting Co., Ltd., of Woodstock, Ont. This plan was not carried through.

Connecticut, Bridgeport. Owing to unforeseen difficulties the plan of Peter Sotnick, 657 Maple St., to establish a small knitting business has been postponed indefinitely.

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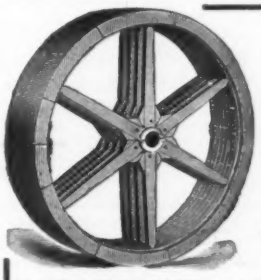

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FACTS AND GOSSIP.

*Georgia, Savannah. George Purse, secretary of the Savannah Board of Trade, states that the hosiery mill that contemplated locating at Savannah, desired to borrow $5,000 to cover the cost of moving and beginning operations. The Board of Trade has been investigating the matter and they are not prepared to make any report at present.

*Illinois, Chicago. The Strauss Knitting Mills, 3230 No. Clark Street, whose business was recently incorporated with capital stock of $15,000, will engage in the mail order business. Seamless half hose is manufactured on 8 knitting machines and 4 sewing machines. Edward Strauss is president, treasurer and buyer.

*Massachusetts, Springfield. Miss H. M. Bailey, who recently purchased the Russell Knitting Works, has removed the machinery to 330 Dwight St. where she will continue the business on the same lines.

Michigan, Rochester. The Western Knitting Mills are running 24 hours a day, according to report, on a large contract for woolen gloves and socks. Recently the plant was enlarged and improved and the manufacture of knit cloth was added to their lines.

Minnesota, St. Paul. Meyer Kuller has withdrawn from the National Knitting Mills, 537 Rice St., and the business is being continued by Z. L. Frisch. Woolen and worsted sweater coats are manufactured.

New Jersey, Camden. Efforts are being made to interest Philadelphia hosiery manufacturers in a site at 33rd St. and River Ave., with a view to establishing a factory at that place. The proposed plant, if established here, will give employment to about 50 hands. Charles Koerner, a shoe dealer, is trying to bring the hosiery manufacturers here, and hopes sufficient inducements will be offered.

New Jersey, Trenton. Underwear and hosiery knitting machinery has been ordered for the new knitting department to be established at the New Jersey State Penitentiary.

New York, Cohoes. The Roff Underwear Company, manufacturers of men's underwear, are reported to be running with night and day shifts on foreign orders.

New York, Dalton. W. D. Burt and M. L. Bentley are operating the Keshequaw Knitting Company, a small plant engaged in the manufacture of hosiery. Mr. Burt has been supervisor of the town for the past eight years.

New York, Eddyville. The Merit Hosiery Company, Inc., has been organized with capital stock of $50,000 to manufacture hosiery by James Rubin, New Rochelle, Simon Lefowtiz, Charles M. Fernert, 784 Kelly Street, N. Y.

New York, Herkimer. The Gem Department of the Union Mills has started with night and day shifts of operatives making woolen underwear on rush orders.

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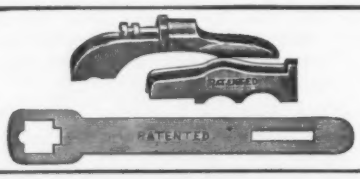

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FACTS AND GOSSIP.

Georgia, Macon. A night and day schedule is in force in the knitting department of the Bibb Mfg. Company, which is working on an order said to be 1,000,000 pairs of socks for export.

New York, New York City. The Eagle Hosiery & Glove Company,, Inc., has been organized with capital stock of $50,000 to manufacture hosiery, gloves and similar goods. The incorporators are Samuel D. Johnson, 842 Madison St.; Isaac Finkelstein, 1265 47th St., Brooklyn; and Isaac Epstein, 216 E. 15th St., N. Y.

New York, New York City. A company known as the Manhattan Knitting Mills has leased a loft at 403 20th St.

New York, Oswego. Machinery is being taken out of the Ontario Mills, now a part of the Frisbie & Stansfield Knitting Company, and moved to other plants of the concern in Utica.

New York, Watertown. The Shaughnessy Knitting Company has resumed full time operation after a period of curtailment lasting about three months. Mr. Shaughnessy, head of the company, is quoted as stating that indications were that the business of the mill would be better this year than during the past year and that he expected the local mill to benefit by the European orders received by other mills of the country as mills without such orders would be called upon to assist in filling the demands of the domestic market. The local mill makes only cotton underwear.

North Carolina, Kernersville. The American Hosiery Mills Company is operating its plant night and day on a large order for hosiery for export and it will be late spring or early summe before the contract will be finished.

North Caroiina, Winston-Salem. The name of the Shamrock Hosiery Mills Company has been changed to the Hanes Hosiery Mills Co. and the capital stock has been increased from $100,000 to $200,000. A. S. Hanes continues as president, and James G. Hanes as treasurer and buyer. Lines of men's and women's seamless cotton and silk hosiery, misses' and children's ribbed hosiery, and infants' hosiery, are manufactured on 200 latch needle knitting machines and 65 ribbers, the product being dyed, bleached and finished.

Ohio, Piqua. An increase has been made in the capital stock of the Atlas Underwear Company from $75,000 to $1.000,000, and will absorb the affiliated plant operated at Richmond, Ind., under the name of the Richmond Underwear Company. No new interests are coming into the concern and the management will remain unchanged.

*Oklahoma, Muscogee. The American Glove & Knitting Company, recently organized as noted, intends to go into the knitting business later, but for the present will confine its attention to the making of cloth gloves. The initial equipment is 10 sewing machines. W. L. Lindhard is president; T. J. Carey, vice-president and R. S. Davis, secretary and treasurer.

Pennsylvania, Harrisburg. Report has it that a concern called the Excelsior Knitting Co. is asking for bids for alterations to the present buildings, the operation to include the construction of a one story brick and concrete structure.

Pennsylvania, Meadville. A charter has been granted the Meadville Knitting Mills with capital stock of $10,000 to manufacture and deal in hosiery and other knit goods. The incorporators are R. E. Brownell and others. According to reports the Brownell Shoe Company, wholesale and retail dealers in boots and shoes, have secured an order for 1,500,000 pairs of wool socks for export and it is said will lease a mill and manufacture part of the order. The company is said to be working now on an order for 180,000 pairs of shoes for export.

Pennsylvania, Philadelphia. The Edwards & Troth Co., operating 13 knitters on knitted neckwear at 1024 Filbert St., have disposed of their equipment and gone out of existence.

Pennsylvania, Philadelphia. The Perfection Knitting Mills, with H. C. Brewin as proprietor, have succeeded the Regal Silk Hosiery Co., 1849 E. Willard St., where they are manufacturing a line of seamless hosiery on 45 knitters, 10 ribbers and 5 loopers. The production is sold direct to the consumer on a mail order basis.

Pennsylvania, Philadelphia. The Lehigh Silk Hosiery Co., located in the Lomax Mills, Jasper and Orleans Sts., have recently acquired possession of the plant formerly run under the name of the Swiss American Embroidery Co., at 5719-21 Walker St., Wissinoming, which they are now running under the name of the Hosiery Company, embroidering silk hosiery for the trade as well as their own production.

Pennsylvania, Philadelphia. The Carlton Mills Co., Inc., 23rd and Hamilton Sts., who have been manufacturing astrachans, stockinet, jersey cloths and plushes, have added a line of novelties in coatings, cloakings and all kinds of knitted fabrics for which they say they are receiving quite an amount of business. They are using cotton, woolen, worsted and silk yarns, selling their production direct.

Pennsylvania, Philadelphia. Nathan Neumann, who started up a plant during the summer of 1914 in the Larkin Building, 22nd and Arch Sts., under the name of the Saxony Knitting Mills, is now operating under the name of the Paragon Knitting Mills on sweater coats, scarfs, caps, children's Angora sets and sweater coats, for men and women. The plant contains 40 knitting machines and 16 sewing machines, the production being sold direct and through the office at 346 Broadway, N. Y.

Pennsylvania, Philadelphia. The Franklin-Apollo Knitting Mills, which has been reported in some publications as operating a plant at 2746 N. 19th St., with 12 knitting machines on knitted neckwear, mufflers and sweater coats, never existed. Inquiry at the address mentioned, a private house, revealed this fact and the further information that the alleged proprietor was employed in a knitting mill in this city.

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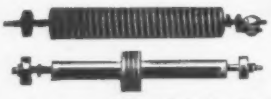

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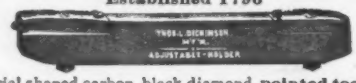

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MISCELLANEOUS.

.....

*Maine, Wilton. A force of men is at work putting the upper mill of the Wilton Woolen Company in order for running. This department has been closed since spring.

Maryland, Baltimore. It is expected that a meeting will soon be held to consider plans for the reorganization of the Mt. Vernon-Woodberry Cotton Duck Company. According to one plan the capitalization will be reduced and a change will be made in the name of the company. George Cator, a member of the Baltimore firm of Armstrong, Cator & Co., importers and jobbers of textile goods, is spoken of as a possible president of the reorganized company.

Massachusetts, Boston. The Hub Gore Makers, T. Martin & Bro. Mfg. Co., the Bridgeport Elastic Fabric Co., and Leolastic have been merged into a new corporation organized under the laws of Massachusetts with authorized capital stock of $4,900,000, under the style of Everlastic, Inc. The stock is classified as $1,000,000 preferred A, $2,000,000 preferred B, and $1,900,000 common. The Hub Gore Makers have a large plant in Brockton, T. Martin & Bro. Mfg. Co., have plants at Chelsea and Lowell, the Bridgeport Elastic Fabric Company has a plant at Bridgeport, Conn., and Leolastic has a plant at Bayonne, N. J. John E. Page, treasurer of the Hub Gore Makers, stated to the Advance News that the several plants will be continued as now conducted and that the permanent officers elected are Bertram T. Martin, president; William B. Spencer, vice-president and general manager; John Abbott, vice-president and counsel; John E. Page, treasurer; Walter L. Martin, clerk and secretary; Charles B. Stretch, assistant general manager; Wilwyn Herbert, assistant clerk and assistant treasurer; and Herbert S. Blake, chairman of the Board of Directors.

Massachusetts, Boston. The American Circular Loom Company, 45 Milk St., has closed the Cambridge factory and the business here is being wound up and the office removed from Boston to 90 West St., New York. They no longer manufacture textile goods, but have these goods made for them by a Pittsburg concern. They continue to manufacture their steel conduits at Kenilworth, N. J.

Massachusetts, Fitchburg. The Shirreffs Worsted Company has received an order for khaki cloth which is expected to keep the plant busy for some time.

Massachusetts, Holyoke. The profit sharing plan tried by the Farr Alpaca Company last year will be continued during 1015, according to a vote of the directors. The company recently distributed $100,000 among its employes who had been with the company one year and given satisfactory service. This year they will receive a wage dividend equal to the dividend received by the stockholders.

*Massachusetts, Huntington. For the past few weeks the Huntington Mfg. Company has been taking advantage of the opportunity, the first in several years, to clean up a varied accumulation of yarns. When this stock is gone they probably will have no further business until the opening of the new season. They expect to get their share of the new business.

Massachusetts, Lawrence. At hearings held to arbitrate the claim of the Farwell Bleachery for damages caused by seizures by the city of Lawrence for the new Central Bridge, Frank C. Shedd, testifying for the bleachery company, estimated their loss at $205,691. The maximum amount which Charles H. Fish, the expert for the city, would allow the bleachery company for the damages resulting from the seizure is $123,629. Charles T. Main, the mill architect and engineer, is the arbitrator.

Massachusetts, Lowell. Carding, spinning and twisting machinery is being taken out of the Lowell plant of the Bigelow-Hartford Carpet Company and sent to the Clinton, Mass., and Thompsonville, Conn., plants.

Massachusetts, Lowell. A large foreign order has been received by the Appleton Company, which is to be finished by the middle of February and shipments are being made daily. The finishing department and certain other departments are being operated overtime.

Massachusetts, Lowell. The plant of the Merrimack Woolen Company at Dracut is running full time and a number of departments are being operated during the night.

Massachusetts, Millbury. Millbury Mills 1 and 2 have started on an overtime schedule which is expected will last indefinitely. The Mayo Woolen Company have been running some departments all night for several weeks.

Massachusetts, Millbury. Creditors have filed a petition in bankruptcy against the National Crash Mfg. Company. S. L. Gabriel, president and general manager of the concern, states that the action will be contested. The mill is running under contract and has work for six months at a good profit. The prospects, according to Mr. Gabriel, are very bright if the company is let alone and can secure more capital.

Massachusetts, Monson. The Ricketts & Shaw Mill is working overtime until ten o'clock evenings on uniform cloths.

Massachusetts, North Billerica. It is reported that the Talbot Mills have received an order for 500 cuts of blue woolen uniform cloth for export. Several departments of the mills are running overtime to make the deliveries required.

Massachusetts, North Brookfield. Machinery is gradually being started up by the Phoenix Linen Company, which succeeded the Oxford Linen Mills, and about 90 people are now at work.

Massachusetts, Norton. The Talbot Mfg. Company, recently incorporated by F. S. Talbot and others, will not do a manufacturing business for the present.

Something Better
That's

Wyandotte Textile Soda

Its use secures

Better scouring effects
Better washing effects
Better bleaching effects
Better effects from the dye

If you are already using Wyandotte Textile Soda you know of these better effects and appreciate that Wyandotte Textile Soda readily and truly means "Something Better" to the mill which uses it.

If you are not using it why not say to yourself, "I cannot afford to pass any article that guarantees me such results, and, too, when these results cost no more than the results I now get."

Order from your supply house, or write us for further information.

Wyandotte Concentrated Ash

The J. B. Ford Co., Sole Mnfrs., Wyandotte, Mich., U. S. A.
This soda has been awarded the highest prize wherever exhibited

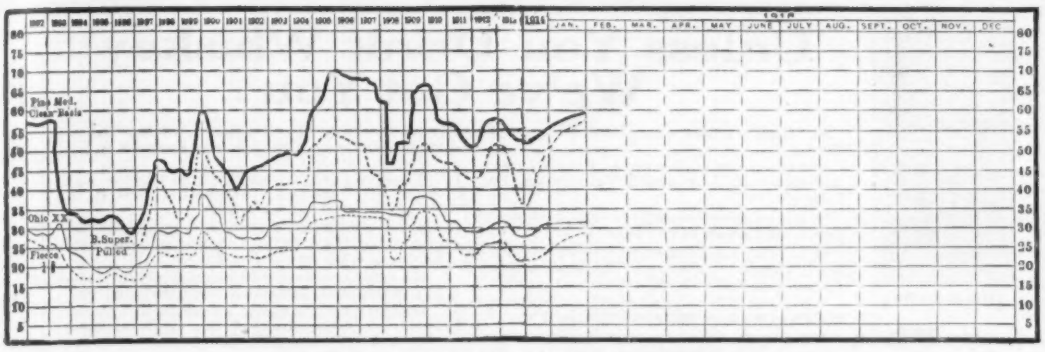

CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

THE WOOL MARKET

The British embargo on wool continues to dominate the wool markets of the world, despite the partial relief afforded by the release of Australian merino wool. Prices have advanced sharply in the markets of this country, and have reached the limits of the buyers' ability to pay. Several substantial cargoes of wool have been shipped from this country consigned to Germany, and have aroused the fear that the British Government will make the embargo complete, as wool is now one of the materials of which there is the most pressing need for war purposes in Germany and Austria. The German Government seized all the wool in the country early in the war, and recently shoddy has also been appropriated. Maximum prices for wool have also been fixed in Germany. The goods market is in a very unsatisfactory condition. Prices have been forced up by the advance in the cost of raw material, with the result that the volume of trade has been greatly reduced. Orders for army goods have helped to fill the gap, but this trade has been comparatively small, respite the hurrah over it.

WOOLEN.

.....

Enlargements and Improvements.

Connecticut, Killingly. At the Assawaga Company, where new construction work and improvements have been under way for several months in the power department, a 600 h. p. engine is to be installed within a few weeks giving the mill twice as much power as the plant has at present from its steam plant.

Connecticut, Mystic. A new boiler has arrived at the Mystic Woolen Company. Recently improvements were made in the installation of a stock blower system and a rearrangement of the equipment in the picker house. Fancy cassimeres, yarns and flannels are manufactured on 7 sets of cards and 94 looms.

Indiana, Sullivan. As suggested in the report of the incorporation of the Sullivan Woolen Mills, the new organization takes over the business formerly conducted by S. Brunger & Co. S. Brunger is superintendent and buyer; W. E. Woods is president, and M. A. Haddon is treasurer. Lines of jeans, blankets, flannels and woolen yarns are manufactured and it is planned to make some increase in the equipment. Two sets, 480 spindles and 9 looms are operated at present.

TETRAZO COLORS
FOR COTTON

We offer these products in all shades for the dyeing of cotton in any form. Among them will be found colors specially adapted to meet the various requirements of fastness to light, washing, cross dyeing and fulling.
Shade cards and samples, with full information, cheerfully furnished on application.

AMERICAN DYEWOOD COMPANY
NEW YORK PHILADELPHIA BOSTON HAMILTON, ONT.

Direct Acting

Nearly 2000 in Daily Use

Double Geared

Unless You Drink Whiskey We've Got You

No distillery has ever Hook'd 'er to the Biler.

But when you smoke your "Prince Albert," remember **R. J. Reynolds Tobacco Co.** have "Hook'd 'er."

When you clean up with "Ivory," remember **Proctor & Gamble** have "Hook'd 'er."

When you wipe your little nose, remember the greatest handkerchief makers—**Acheson, Hardin Co.**—have Hook'd 'er.

When you slip on your stockings, remember the **Onyx Hosiery Mills** have Hook'd 'er.

When you take up your newspaper, remember the **International Paper Co.** have "Hook'd 'er."

When you buy the "Pride of Iowa," remember that **John Morrell & Co.**, the great packers, have "Hook'd 'er."

When you ride in the cars, remember the **American Car & Foundry Co.** have "Hook'd 'er."

When you hear the typewriter rattle and sing, remember the **Remington Typewriter Co.** have "Hook'd 'er."

When you tell your chauffeur you are ready to go, remember the **Packard** and **Cadillac** folks have "Hook'd 'er."

When you warm your little toes or fry your ham, remember **Detroit Stove Works, "Kalamazoo Direct to You," Sears, Roebuck & Co.** have all "Hook'd 'er."

When you enjoy your pork and beans and other "57 varieties," remember that **H. J. Heinz Co.** have "Hook'd 'er."

When you paint up the old shebang, just remember "We Paint the Earth," **Sherwin-Williams & Co.** have "Hook'd 'er."

When you turn on the electric light, remember the **General Electric Co.** have "Hooked 'er."

When you write **Her** a sweet little note or two, remember **Crane & Co.** (Dalton) have "Hook'd 'er."

When you slip your pretty mug into the "Arrow" circle, remember **Cluett, Peabody & Co.** have "Hook'd 'er."

When you take **Her** out for a little ice cream, "the Velvet Kind," or some other, remember **Crane** and **Chapin-Sacks**, and other ice cream fellows have all "Hook'd 'er."

And so we could go on for this whole paper full.

When you read of Uncle John D. and the Laird of Skibo handing out their millions to feed the hungry or bring Peace on earth, remember that both the **United States Steel** and **Standard Oil** have "Hook'd 'er."

Here's the Moral—If you've got steam

Hook 'er to the Biler

CRAIG RIDGWAY & SON CO., Coatesville, Pa.

Elevator Makers to Folks Who Know

BLEACHERS!

Your value to the mill is in what you know.

Can you say to them:

"I know how to bleach without weakening, without yellowing, without loss of softness and elasticity.

"I know how to do away with Damage and Come-backs.

"I know how to do this without increase in cost and without calling for new apparatus?"

If you can't say this, apply for "Our Free Correspondence Course on Peroxide Bleaching."

THE ROESSLER & HASSLACHER CHEMICAL CO.

NEW YORK

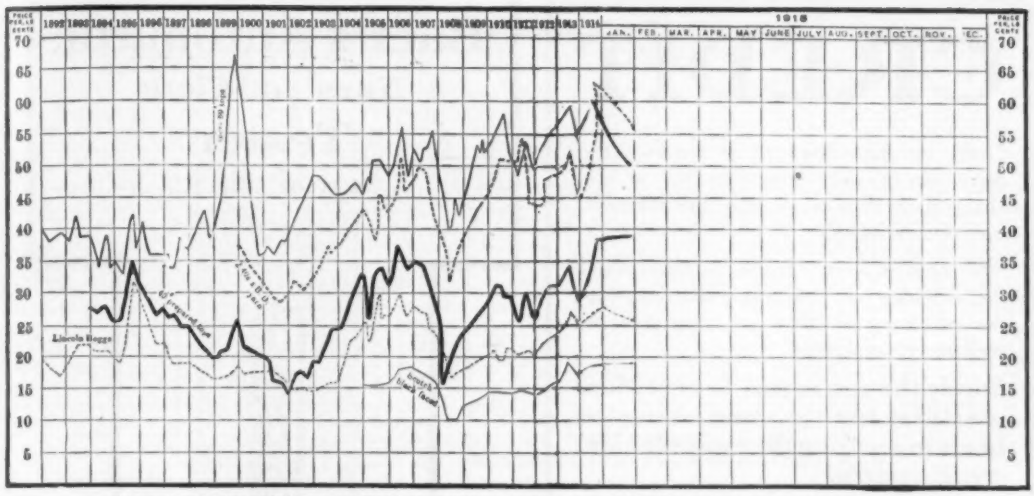

CHART SHOWING COURSE OF PRICES FOR WOOL, TOPS, AND WORSTED YARN AT BRADFORD, ENGLAND

THE BRADFORD MARKET

Bradford, Eng., Jan. 26, 1915.

Large new business in army fabrics has been put through involving purchases of tops for delivery at all dates up to next June and again stiffening prices for crossbred, which had receded a little at the year end. Current values for spot delivery are influenced by the congestion of traffic at the docks which prevents owners from obtaining by contract date wool they have bought and paid for. In general, however, the prospects of the maintenance of high prices for crossbreds are better than a month ago.

In England merino has been abnormally cheap in relaton to crossbred, 50s tops fetching two cents more than super 60s. The disparity is assisting consumption of merino and causing spinners in that line to be busy. Were the Continental mills at work it would be natural to expect a rise, but spinners hope to realize more for yarns than any extra that they have to pay for wool.

English wools are firmer in response to the strength of crossbreds and skin wools are in good demand. Machinery is very fully employed upon goods requiring a lot of wool to make and business other than in army fabrics is distinctly improving. Dissatisfaction prevails in some quarters over the restrictions upon the export of merino wool and noils, but there is no word of an intention to remove the embargo as yet. The situation will not be easy enough to encourage lifting the embargo for probably a month or two. Until large arrivals are at hand and the imports are more accessible inducement is lacking.

WOOLEN MILL NEWS

.....

Enlargements and Improvements.

North Carolina, Gastonia. It is expected the addition to the plant of the Flint Mfg. Company which has been under construction for some time will be equipped before the end of the month. The enlargement is a 133 by 100-foot brick addition and the new machinery includes 11,520 spindles and preparatory machinery. This balancing of equipment will require 250 h. p. additional and will enable the company to abolish night work in the spinning department. It will still be necessary to continue operating the card room at night. Some of the machinery is already in place. Combed Peeler yarns, 40s to 80/2s, are manufactured.

North Carolina, Kannapolis. Machinery is being erected in the new addition to the card room at No. 1 Mill of the Cannon Mfg. Company, and also in the card room in No. 2 Mill.

*North Carolina, Lexington. The contract for the addition to the plant of the Erlanger Cotton Mills Co. has been let to W. Lee Harbin, of Lexington, and calls for the completion of the addition by July 1. This extension will make the mill 956 feet long and the new equipment will include 15,000 ring spindles and 420 looms, making the total equipment 41,000 spindles and 1,100 looms. The contracts will soon be awarded for 31 additional cottages for operatives to be equipped with electric lights, water and sewerage connections. The first unit of the Erlanger Mills has been in operation less than a year. A special cloth for "B. V. D." underwear, manufactured by Erlanger Bros., of New York, is made. The capital stock of the Erlanger Cotton Mills Company is $600,000. M. S. Erlanger, New York, is president; G. W. Mountcastle, Lexington, treasurer and buyer, and J. M. Gamewell, superintendent.

CREDIT

Every merchant is aware of the fact that there are constant improvements in mechanical devices to simplify the manufacture of merchandise.

The successful merchants instantly install the machine or attachment that increases the efficiency of labor, or safeguards the welfare of employees.

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Do not renew your contract for credit reporting for 1915 until you have a demonstration of the National Service.

Write to-day for full particulars of this new, automatic, Credit System.

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Yarn and Cloth
Tester
MOTOR DRIVEN

Sold Exclusively Through
ALFRED SUTER
Textile Engineer
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"MADE IN THE U. S. A."
and every day it is more and more extensively used "in the U. S. A." for producing

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Water as Soft as Rainwater for all Textile Purposes

Write for Booklet, "Permutit in Textile Industry"

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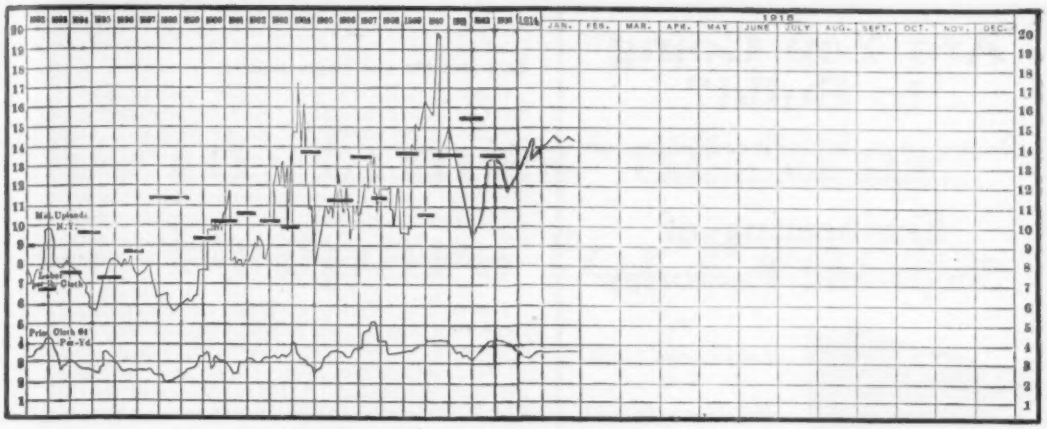

CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.
The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.

THE COTTON MARKET

A decided increase in the foreign demand for cotton and improved conditions in the cotton goods markets account for the advance in prices. Exports are restricted by the lack of ships. Freight rates to Europe have in some cases been ten times the normal rates in time of peace. Another factor in the advance was the belief that the world's consumption would be much larger than it was thought would be the case same months ago. The movement into sight from Aug. 1 to Jan. 22 is estimated by the "Chronicle" at 9,212,389 bales, as compared with 11,134,115 bales last year, which shows that despite the record crop the South has been able to hold back the cotton that would otherwise have sent prices much lower. The same authority estimates the world's visible supply of cotton in Jan. 22 at 6,615,782 bales, as compared with 6,235,575 bales on the corresponding date in 1914, 6,162,786 bales in 1913, and 5,884,686 bales in 1912.

COTTON.

.....

New Mills.

Pennsylvania, Philadelphia. The Sterling Mills, Shackamaxon & Wildey Sts., have been started up by James Tattersall with 12 looms which he is operating on Turkish towels and Terry cloths. He is selling direct.

Tennessee, Johnson City. Dever and Stanyard Little, of Great Falls, S. C., plan the organization of a company to build a new cotton mill here on a site at the railway junction just outside of the city limits. According to report the company will be capitalized at $500,000 and will build a 25,000-spindle cloth mill to be driven by electric power from the Eastern Electric Company's wires. Dever Little is superintendent of the Republic Cotton Mills of Great Falls, S. C., who shortly after the completion of their plant a few years ago were reported interested in building another 25,000-spindle mill to make print cloths.

.....

Enlargements and Improvements.

*Alabama, Mobile. The Barker Cotton Mill Company added 2,000 spindles and 60 looms during the past year. It has been reported that plans are being made to install a bleaching and finishing department, but no statement can be secured from the management. Sheetings, diaper cloth and cotton yarns are manufactured.

Canada, Quebec, Sherbrooke. The Canadian-Connecticut Cotton Mills, Ltd., have placed orders for additional looms and preparatory machinery. At a recent meeting Obadiah Butler, who has been manager of the Canadian plant, was elected manager and director of the Connecticut Mills Company at Danielson, Conn., and will henceforth be identified with both companies. Mr. Fitz retains his connection with the Danielson plant as secretary.

MANUFACTURERS OF
WEIMAR BROS. Cotton Mercerized Tapes
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES
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Devoted exclusively to single cloths, the construction and combination of simple and special weaves, the structure of standard cloths, the theories of colour and application of colours to textile fabrics; the designing of ordinary figured fabrics forms an important section.

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COTTON MILL NEWS

.....

Enlargements and Improvements.

Connecticut, Danielson. The capital stock of the Quinebaug Company is to be increased from $500,000 to $750,000. The money from the sale of the new shares will be devoted to purchasing new equipment and making improvements in the mills. Sheetings and shirtings are manufactured on present equipment of 43,000 ring, 22,000 mule spindles, and 1,500 looms. It was noted recently that a large amount of new machinery would be installed.

Connecticut, Killingly. New equipment ordered some time ago by the Killingly Mfg. Company is being erected and will increase the capacity about 30 per cent. Practically all the new machinery will be running early in February except the new looms. Recently the plant has been running overtime. Tire fabrics are manufactured.

*Connecticut, Putnam. The addition to the plant of the Manhasset Mfg. Company, on which work was started last October, is completed and machinery is being installed. The addition is three stories high and contains about ten thousand square feet of manufacturing space. Tire duck is manufactured. The Manhasset Mfg. Company and the Waterman Worsted Company, the latter concern manufacturing worsted goods, are running all night.

Connecticut, Unionville. The business of J. Broadbent & Son has been incorporated with capital stock of $125,000, and organization has been effected with Fred J. Broadbent, president and buyer; A. C. Broadbent, treasurer, and J. D. Horsfall, superintendent. An addition is under construction which will be 3 stories high, 100 by 50 feet, and a quantity of new machinery is to be added for manufacturing cotton batting and absorbent cotton.

Georgia, Columbus. The Muscogee Mfg. Company, which closed in December for the purpose of installing new machinery, has resumed manufacturing. It is stated the export demand for goods is increasing and it is expected the plant will be continued on full time. Tickings, towels, quilts, cheviots and similar goods are manufactured. Several months ago the Muscogee Mfg. Company purchased all the property on the west side of Broad St. between 14th and 15th Sts., and it is reported that a new 25,000 spindle addition will be built.

Georgia, Macon. Orders have been placed by the Bibb Mfg. Company for new preparatory machinery and new twisters. New equipment will also be installed in the Porterdale Mills to replace old machinery. These improvements will cost between $75,000 and $100,000.

Georgia, Rome. The Anchor Duck Mills are having plans drawn by Lockwood, Greene & Co. for a waste mill, 200 by 100 feet, with an ell, 40 by 50 feet. A waste yarn spinning plant is to be equipped and arrangements have been made for the system that is to be used.

In Times of War Prepare for Peace

The record of 1914 is written, the results analyzed. You know what you can afford to do in the way of new equipment and what you cannot afford not to do to prepare for the great volume of business approaching on the inevitable wave of prosperity.

Let us talk things over with you. We are *specialists* in textile machinery *from the picker to the loom*, and should be able to suggest things of interest. Write us.

POTTER & JOHNSTON MACHINE COMPANY
Pickers and Revolving Flat Cards

WOONSOCKET MACHINE & PRESS COMPANY
Roving and Drawing Frames

FALES & JENKS MACHINE COMPANY
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SOUTHERN REPRESENTATIVE
J. H. Mayes
Independence Building, Charlotte, N. C.

MERCERIZED YARNS

Dyers, Bleachers, Gassers.

Dyers of Colors Fast to

SUN AND BLEACHING

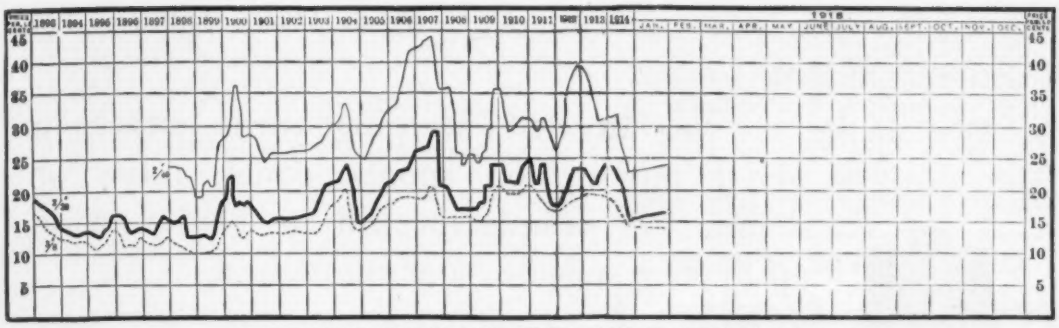
Aberfoyle Manufacturing Company

CHESTER, PA.

402 Morris Building
Philadelphia

746 Insurance Exchange
Chicago

Yarn Department



GRAPHIC CHART SHOWING RANGE IN THE PRICE OF COTTON YARN TO DATE.

THE COTTON YARN MARKET

The cotton yarn business during the month of January was rather unsatisfactory. Probably not over 50 per cent. of the Philadelphia looms are in operation. This, with the jump of from 1 1/2 to 2 cents per pound in spinners' quotations, has caused the market to become stagnant within the past few days. Spinners claim that with even the advance in price they are hardly able to show a profit and refuse to consider business at lower figures. Manufacturers state that it is almost impossible to run their looms even at prices based on the lower yarn quotations, so there is no inducement for them to speculate in yarns for which at present he sees no requirement. 2/20s warps which were selling for 15 cents per pound a few weeks ago are quoted by the spinners at 17 to 17 1/2 cents, but 16 cents is about the market in Philadelphia. Even at that figure hardly a fair business has been done. Warps which sold as low as 16 1/2 cents for 2/30s are now held as high as 19 cents by the spinner and local prices are 18 to 18 1/2 cents for stock descriptions. The future of the yarn business depends wholly on the development of the demand for manufactured fabrics. Unless this demand increases it will be impossible for spinners to obtain the prices which they are quoting at present. Should there develop an active demand for manufactured goods there is little doubt but that prices may go to even a higher basis.

Eastern Cops.

6s	14¾
8s	15¼
10s	15¾
14s	15¾
16s	16¾
18s	17¼
20s	17¾
22s	18¼
24s	18¾
26s	19¼
30s	20¼
34s	22
36s	23
40s	24

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½ c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler

12s	16½
14s	17
18s	18
20s	19
24s	20
26s	21
30s	22
36s	24½
40s	26½
45s	30½
50s	32½
55s	38½
60s	41½

Eastern Two-Ply Warps, Carded Peeler

2/30s	22½
2/36s	25
2/40s	27
2/45s	31½
2/50s	33½
2/60s	42½

THE PHILADELPHIA MARKET

7s and coarser	15
8s and 9s	15
10s	15

Broad Silk and Ribbon Manufacturers

cannot obtain their maximum production unless the 2 or 3 ply Spun Silk Yarn used for warping is free from imperfections and true to size.

We make a specialty of warping yarns either in the grey or dyed, put up on spools, cones, tubes or skeins. A sample lot will be gladly made up to your specifications on request.

We make singles in all sizes on cops in the grey. Do you want to see samples?

Nonotuck Silk Company

CORTICELLI SILK MILLS
Established 1838
SPUN SILK YARNS
Florence, Mass.

THE J. R. MONTGOMERY CO.

Windsor Locks, - Conn.

MANUFACTURERS OF

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools, Tubes and Cones. In Fancy Twist, Colors and Printed.

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

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HIGH GRADE COTTON YARNS White, Colors, Bleached
On Beams, Jack-Spools, Cones, Skeins and Chain Warps

FAST-BLACKS & COLORS { For Woolen Mills a Specialty } WE SELL DIRECT

PRESS PAPER
HIGHEST GRADE
BEST VALUE
Mills
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12s	15-15½
14s	15½-16
16s	16½
18s	17
20s	17½
22s	18
24s	18½
26s	19
30s	20
40s	25
50s	32

Southern high grade mule yarns:—

Cones

10s	16½
12s	17
14s	17½
16s	18
18s	18½
20s and 22s	19-19½
24s	20

Southern frame yarn, lower grades:—

6s and 8s	14½
10s	14¾

Eastern cones (high grade quality):—

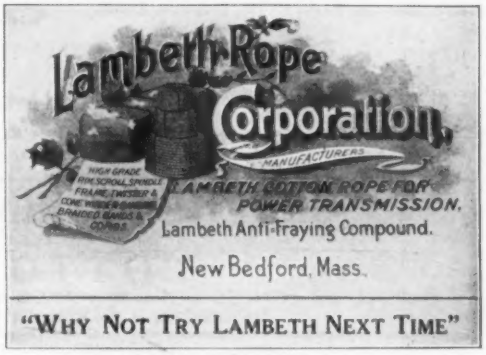
10s	17
12s	17½
14s	18
16s	18½
18s	19¼
20s and 22s	19¾-20¼

Skein yarn (mostly Southern):—

4s and 8s soft	14
10s and 12s	14½-15
14s and 20s	15-16½
22s	17
10/2	14½
16/2	15
20/2	16½
30/2	19
40/2	24
8/2	14½
7/6	14½

Southern warps:—

10/1	14½
14/1	15
16/1	15½
20/1	16½
22/1	17
26/1	18
30/1	19
8/2	14½
12/2	15
14/2	15½
16/2	16
20/2	17
26/2	18½
30/2	19½
40/2	25
50/2	32



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MERCERIZED GLAZED GASSED } COTTON YARNS

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Manufacturers of
Twines, Threads and Yarns
Jacquard Harness Twines of all kinds on hand and made to order
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Patented Hosiery Winders, Cop Winders and Spoolers
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FOR Student and Manufacturer. Covers all operations from ginning through ring and mule spinning.
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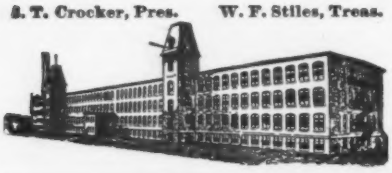

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FITCHBURG, MASS.
Capacity, 45,000 Spindles.
HIGH GRADE YARNS
From Egyptian and Peeler Cotton, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING COMPANY
PAWTUCKET, RHODE ISLAND
COTTON YARNS
CARDED and COMBED, in Nos. 10 to 120, from PEELER EGYPTIAN and SEA ISLAND COTTONS
MERCERIZED YARNS, IN SINGLE OR PLY, A SPECIALTY

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Manufacturers of
NARROW FABRICS
SPOOL TAPES. STAY BINDINGS AND BRAIDS
Also Sole Manufacturers of
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LINDSAY THOMPSON & CO., LTD.
FLAX SPINNERS BELFAST, IRELAND
Linen Weaving and Knitting Yarns
LINEN THREADS OF EVERY DESCRIPTION
T. J. PORTER & SONS Large Stocks
Selling Agents, Philadelphia Quick Delivery

Knitting and Weaving YARNS
Cones, Cops, Warps, Skeins,
Single, Double, Three-Ply, etc.
Peeler, Egyptian, Mixed Colors.
Large Assortment
EDWARD S. HYDE
926 CHESTNUT STREET
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F. W. MAURER & SONS CO.
MANUFACTURERS OF
Fringes, Tapes, Bindings & Narrow Fabrics
Office and Factory: WAYNE AVE. and BRISTOL ST.
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Lowell Crayons Meet the requirements of any cotton, woolen or worsted mill.
May we send samples? 15 colors and white
LOWELL CRAYON CO. Original Manufacturers LOWELL, MASS.
TRADE MARK ON EVERY BOX

The Bradley Stencil Machine
Makes stencils in half a minute, at reduced cost of 1-10 cent each. Write for catalogue and price list.

In universal use by thousands of manufacturers and shippers.
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101 Beekman St. New York, U.S.A.
Also manufacturers of Oil Stencil Board. Write for prices and samples.
101 Beekman St. New York, U.S.A.

HUGHES FAWCETT
115 and 117 Franklin St., New York
Linen Weaving and Knitting Yarns
Linen Jacquard Harness Twines
And Linen Yarns and Threads for every purpose
Turkey Red Yarns
LARGE STOCK PROMPT DELIVERIES

Established 1844
BENJ. BUCKLEY'S SON
(WM. J. BUCKLEY) *Gun Mill, Paterson, N. J.*
Manufacturer of all kinds of SPINDLES, FLYERS, RINGS, TUBES, CAPS, etc., for Cotton, Silk, Flax, Woolen and Worsted Machinery.
Roving Spindles and Flyers a Specialty. Light Forgings.
REPAIRING OF ALL KINDS

The Ramie Agency
Manufacturers' Agents
New York
Ramie Yarns and Threads
HAVE REMOVED
TO NEW AND LARGER QUARTERS AT
432 FOURTH AVE. Corner of 29th St.

THE LINEN YARN MARKET

The linen yarn market has been exceedingly quiet since our last report, not so much from the small inquiry as from the scarcity of suitable yarns. Manufacturers are not inclined to accept advances until their present stocks at the factories have been used up, as business on the finished goods is not showing them a corresponding advance in price. The demand for finished goods has been considerably curtailed and few buyers are prepared to stock goods at their enhanced values. The yarn market is not by any means excited. At the same time it is exceedingly firm and spinners are not inclined to force business, but are quietly allowing the manufacturers to come after them. In some districts the flax market has been practically cleaned up. Should the weather remain unchanged and an ample supply of water for the scutching mills continue, some of the districts will have all their flax cleaned up in a few weeks. There is a probability that some of the spinning mills may go on short time until they receive further supplies of flax from the Continent.

The American demand for linen is very meager and most of the mills are inclined to put their looms on cotton as our market for linens has not risen to such an extent that manufacturers can see their way clear to manufacture goods at the enhanced prices for yarns.

("A" Quality)

35s Lea on cones	83-90
50s Lea on cones	96
60s Lea on cones	1.00
80s Lea on cones	1.00
90s Lea on cones	1.10-1.15
100s Lea on cones	1.15-1.20
110s Lea on cones	1.30-1.40
120s Lea on cones	1.70

KNIT.

New Mills.

Georgia, Atlanta. James L. Logan, 1301 Healey Bldg., commissioner of the Spink Estate, and associates, are interested in the development of a town within fifty miles of Atlanta and plan to establish there a plant for manufacturing hosiery, sash cord, cotton banding and other products. Mr. Logan is interested in information on equipment.

Georgia, Columbus. A new company is being organized by J. K. King and Hubert Murray for the purpose of establishing a knitting mill with initial capacity of 250 dozen pairs of hosiery per day. It is understood that quarters have been secured in a brick building at the corner of 11th St. and 12th Ave., and that arrangements are being made for machinery. Men's half hose will be the product. Messrs. King and Murray were connected with the Massey Hosiery Mills, which have been absorbed by the Perkins Hosiery Mills.

*Massachusetts, Hudson. The Shetland Knitting Mills, Inc., recently reported organized with capital stock of $8,000, will begin the manufacture of infants' and children's worsted knit goods in the building at 8 Houghton St. in February or March. The number of knitting machines and sewing machines has not been decided upon. Electric power will be used. Albert B. Freeman is president, and Harry C. Beless, treasurer and buyer. The product will be sold direct.

Michigan, Norway. H. Erickson has equipped a small plant for the manufacture of sweaters and various small knitted articles.

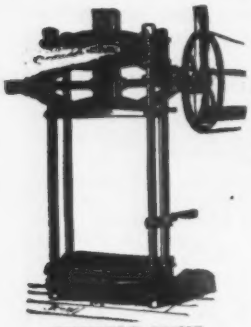
*Minnesota, Rushford. The hosiery knitting plant established here by J. H. Backman comprises 15 latch needle knitting machines, operated by steam and gasoline power on all-wool seamless hosiery. The product is sold direct.

*New Jersey, Passaic. Construction work has been completed on the new 4-story brick mill of Paul Guenther and machinery is being erected to make men's and women's full fashioned silk hosiery. Mr. Guenther, who is president of Paul Guenther, Inc., at Dover, N. J., recently purchased 14 acres bordering on the Lackawanna R. R. tracks. The new plant in no way affects the one in Dover.

*New York, Canandaigua. About February 1 the Roper Knitting Co., Inc., will begin manufacturing in a building on North Main St. This concern has been manufacturing at Pittsford. A few weeks ago the business was incorporated and the building on North Main St., Canandaigua, was purchased. They manufacture men's, women's and children's sweaters, sweater coats, and novelties, and in the plant here will have electric power. The capital stock is $15,000. George Roper is president and buyer, and A. C. Clark is treasurer.

*Pennsylvania, Allentown. Five knitting machines and 30 sewing machines, all new, will comprise the equipment of the Werle Underwear Company, which is establishing a plant at 722 Linden St. for manufacturing children's waists and boys' and girls' union suits. Manufacturing will be started about February 1. Electric power will be used. The new company is composed of Mrs. K. A. Werle and C. H. Patterson. Mrs. Werle was connected with the Nazareth Waist Company for twenty-eight years, resigning that connection on January 1.

Pennsylvania, Boyertown. John Blood & Company, 7th and Somerset Sts., Philadelphia, manufacturers of men's and women's seamless hosiery, have interested local investers in a new hosiery mill project and it is expected that a mill will be erected here which will give employment to several hundred hands. Plans for the building are in preparation and, according to reports, construction work will be started in about two weeks. Among the local people interested are Daniel C. Brumbach and Fred S. Koons.



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Boomer & Boschert

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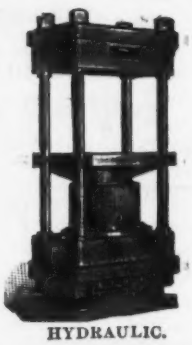
Hydraulic or Knuckle Joint
Any Size Any Power

Boomer & Boschert Press Co.

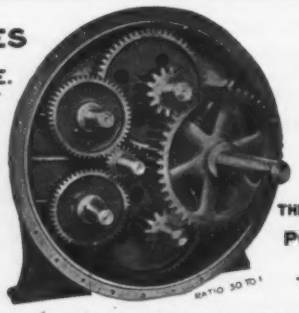
338 WEST WATER ST., SYRACUSE, N. Y.

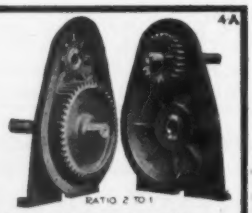


HYDRAULIC.

4A

GEARED
SPEED REDUCING DEVICES
TO CONNECT
HIGH SPEED MOTOR TO MACHINE.
GEARS RUN IN OIL. CASES DUSTPROOF
OTHER TYPES





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You Can Lower Your Costs

With Automatic Accurate Records of Output

No Mistakes
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Durant Counters

Show the value of each employee, of each machine, reduce overhead, stimulate production.

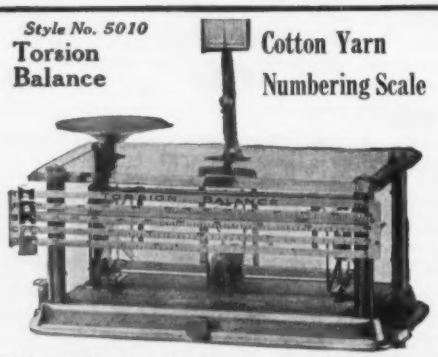
Whether you measure product by piece, picks, inches, yards, or any other way, we have a *Counter* for *your particular needs.* — **Write for Catalog 20.**

Durant Manufacturing Co., Milwaukee, Wis.

Wm. V. Threlfall, Marshall Building, Boston
Charles Hammer, 260 West Broadway, New York

Style No. 5010
Torsion Balance

Cotton Yarn Numbering Scale



This balance is so constructed that the Yarn Number from number 200 to 5 is read direct from scale beams. No figuring required. We make a similar scale for woolen and worsted yarns.

Manufacturers of Special Scales for Special Purposes.

THE TORSION BALANCE COMPANY
Factory, Jersey City, N. J. Office, 92 Reade St., New York
Pacific Coast Branch - San Francisco, Cal.

KNIT.

.....

Mills Starting Up.

*Canada, Ontario, Orangeville. The new Dods Knitting Co., Ltd., which recently began manufacturing, has 6 sets of woolen cards, 20 knitting machines and 30 sewing machines and is manufacturing men's flat and ribbed underwear. John M. Dods of the Alton (Ont.) Knitting Mills, organized the new concern and is president and buyer. Andrew W. Dods is treasurer, and Samuel Parker is superintendent.

*Virginia, Williamsburg. The Old Dominion Knitting Mills has been incorporated with capital stock of $15,000. John McGinnis is president and Edmond Fain, secretary and treasurer. These men are starting up the old Williamsburg Knitting Mill, as noted in previous reports, and it is understood the new corporation will operate the plant on sweater coats.

*Wisconsin, Brodhead. George Schmitz, D. E. Hooker and J. C. Berryman, who formed a partnership for the manufacture of sweater coats, underwear, hosiery and other knit goods, are manufacturing under the name of the Brodhead Knitting Company. Quarters have been rented and manufacturing started January 7. Mr. Schmitz is the superintendent and buyer.

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Enlargements and Improvements.

Canada, Ontario, Gananoque. The Booth Felt Company is considering plans for starting a knitting department and will manufacture wool socks E. M. Booth is manager.

Canada, Ontario, Toronto. The Star Knitting Company has moved from King St. to larger quarters at 92 Sherbourne St. and will make increases in the equipment. Worsted knitted novelties are manufactured.

*Canada, Ontario, Chesley. The hosiery knitting department equipped by the Chesley Woolen Mills Company comprises 4 knitting machines and 1 sewing machine on which heavy woolen socks are being made.

Georgia, Macon. The Southland Knitting Mills, manufacturers of women's ribbed underwear and union suits, have recently added some new equipment.

*Pennsylvania, Slatedale. The new hosiery mill being established here by Eugene F. Krum is located in a building owned by Henry W. Gloss, which is 40 by 60 feet, 3 stories high. The plant will be known as the Slatedale Knitting Mills, Eugene F. Krum, proprietor. Before the first of February the manufacture of children's hosiery will be started with 12 ribbers, 5 loopers, and 10 knitters, using mercerized yarns, 2/30s, 2/40s, 2/50s and 2/70s. Steam power will be used.

*Tennessee, Chattanooga. Possession has been taken of a building on Market St., between 4th and 5th Sts., by the new Nick-a-Jack Hosiery Mills, whose organization was recently noted. The structure is being remodeled. A full report of the new concern cannot be given as many of the details have not been decided. It is probable that the number of knitting machines comprising the initial equipment will be greater than ten machines, the number originally stated. The company has capital stock of $30,000. W. C. Kyle, formerly superintendent of the Chattanooga Knitting Mills, is president and general manager; and T. Walter Fred, secretary and treasurer. The office is at the S. E. corner of Broad and 8th Sts. A high grade of men's silk half hose will be manufactured and finished. Oswald Rothe, formerly superintendent of the Aseptic Cotton Products Company, will be in charge of the dyeing and finishing.

COTTON MILL NEWS

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North Carolina, Taylorsville. The small addition to the plant of the Taylorsville Cotton Mills Company for which contract was awarded in November, is now completed and machinery is being erected, including 4 cards, 960 spindles and intermediate machinery.

*South Carolina, Anderson. New automatic looms ordered by the Anderson Cotton Mills several weeks ago are being received. Old looms are being taken out and broken up.

Tennessee, Covington. A dye house has recently been installed in the plant of the Tipton Cotton Mills, manufacturers of cotton goods. J. H. Ledyard is president and general manager; W. L. Wagner, treasurer, and J. G. Coman, superintendent and buyer.

Tennessee, Shelbyville. The capital stock of the Sylvan Cotton Mills has been increased from $72,000 to $90,000, and the new capital will be used to increase the plant. During 1914 about 3,000 spindles were added with new spoolers, warpers and other machinery. Osnaburgs and ducks are manufactured.

*Texas, Denison. Contract has been placed by the Denison Cotton Mills Company for repairing and replacing the walls and supports which recently gave way. The building did not collapse as was stated in the original reports, but the piers supporting the center section settled, allowing that section to settle slightly. The floors will all be put back and all the original piers will be replaced and 58 new piers will be put in. W. B. Munson, Jr., treasurer and manager, anticipates that three to four weeks will be required to complete the work. The plant was not in operation at the time of the accident, as they were shut down due to the installation of a complete new power plant. There was no machinery damage of any consequence, and the loss due to the accident, which will include the repairing and replacing of the building and starting up the mill, will run in the neighborhood of $7,000 to $8,000.

Virginia, Danville. The equipment of the Riverside & Dan River Cotton Mills, Dan River Division, is now 235,000 spindles, 1516 broad looms and 5,407 narrow looms. The capital stock of the company has been increased to $8,500,000. H. R. Fitzgerald is treasurer and buyer, and George W. Robertson is superintendent.

SMITH & FURBUSH MACHINE CO.

PHILADELPHIA

Manufacturers of

PICKERS—Lumpers; Rag, Burr, Wool, Cotton, Jute, Fearnaught and Garnett Pickers; also Rag, Carpet and Jute Shredders.

WILLOWS—Continuous Cotton Stock Opening, Cleaning, Metal Extracting and Condensing Outfit; also Square Box and Cone Willows or Dusters.

GARNETT MACHINES – For carding cotton and woolen waste clippings, etc.; also for manufacturing cotton, wool and jute batting or felts.

FEEDS—Self feeds for cotton, wool, worsted or jute; also Camel Backs, Blamires and Apperlys.

METALLIC BREASTS Burring Machines and Self-Stripping Feed Rolls for Cards and Garnett Machines.

RECLAIMING MACHINE—For Opening and Cleaning various kinds of Cotton Mill Waste.

CARDS—Woolen, Worsted, Cotton Waste, Shoddy, Hair and Jute Cards; also Special Cards for the manufacture of Wool Hats.

MULES—Heavy and Durable for Wool and Waste Yarn.

TWISTERS—Plain or Fancy Twisters for Flake, Loop or Bourette Yarn.

BOBBIN WINDERS—Automatic Jack Bobbin Builder and Adjustable Creel for different length spools.

WARPING MACHINERY—Copper Cylinder Warp Dressers with single and double size pans; beamers; Section and Pinless Warp Mills, Creels and Dresser Spoolers for Wool or Worsted.

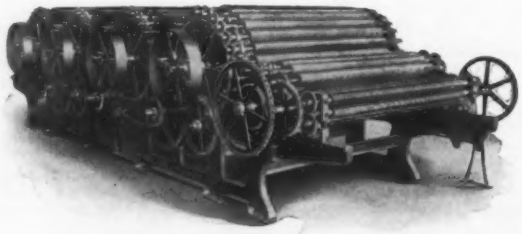
GRINDERS, Etc.—Floor, Traverse and Portable Grinders for Cards, Garnetts or Rag Pickers; also Turning Rests, Fillet Winders, Card Clothing Stretchers and Cleaning Frames.

Special Circulars furnished for each Machine

Felting Machinery for Manufacturing Soft Felts or Commercial Batts, for Mattresses, Comforts, etc, from Cotton Waste, Linters, Jute, Wool and Wool Waste

A complete line of Machinery for Manufacturing Gunny Bagging from Old Gunny Bagging
Complete Equipment for Manufacturing Mop Yarn and Rope from Cotton Waste

Estimates and complete plans furnished

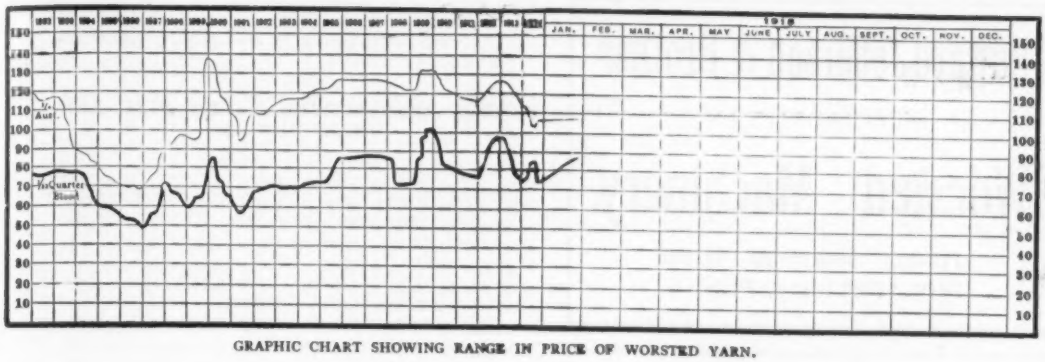


4 Cylinder 30" Garnett Machine
Send for Circular R 85

A Garnett Machine of this size will reduce to fibre, hard twisted thread waste, without reducing the length of staple to any extent.

Of course, we build smaller size machines for other kinds of stock. Send us a sample of yours.

Our Automatic Self Feeder has the latest improvements



GRAPHIC CHART SHOWING RANGE IN PRICE OF WORSTED YARN.

THE WORSTED YARN MARKET

The worsted yarn market has shown considerable more activity within the past month and new business and inquiries have been decidedly more numerous. Prices are being generally withdrawn by spinners and new quotations on 1/4, 3/8 and 1/2 blood grades particularly, are being made from week to week following the rapid advances in the raw material end. Yarns made of 1/4 and 3/8 grades are now based on prices quoted and obtained for these wools which necessitate a considerable advance. These wools are being sold today on a basis that quarter blood 2/32s will cost at least 82 1/2 to 85 cents per pound, with a possible further advance. The fact that buyers of goods, both in the men's wear, dress goods and knit goods lines have been holding off has had the effect of keeping down much higher advances than would be ruling today on an ordinary normal business on yarns. The wool situation as regards 1/4s, 3/8s and 1/2 blood grades is presenting a serious problem. Those who have made their samples and figure on domestic stocks are beginning to find considerable difficulty in obtaining this character of stock from now on. As soon as the buyer of goods appreciates the critical condition of the raw material market and the buying of goods commences rapid advances are predicted.

As an illustration of the condition prevailing today we quote the following statements made by spinners in both the French and Bradford lines. One says: "On account of the condition of the wool market we cannot quote any satisfactory prices. Today we quote 72 cents for 1/26s and 73 cents for 28s and at the present time we will have to have a chance to cover on either tops or wool before we can accept any orders." Another spinner reports that they are withdrawing some yarns from the market stating that there is an inability on their part to secure the wool, having none in stock and being unable at the present time to secure any at a satisfactory price.

BRADFORD SPUN YARN

2/12 to 2/16 low common	67½-70
2/20 to 2/24 low 1/4	72-75
2/20 to 2/25 1/4 blood	75-77½
2/26 to 2/28 1/4 blood	77½-80
2/32 1/4 blood	77½-80
2/20 3/8 blood	80-82½
2/26 3/8 blood	82½-85
2/32 3/8 blood	85-87½
2/36 3/8 blood	87½-90
2/40 1/2 blood	97½-1.00
2/40 delaine	1.00-1.05
2/50 delaine	1.07½-1.10
2/40 Australian	1.05-1.07½
2/50 Australian	1.10-1.15
2/60 Australian	1.22½-1.25
3/30 and 3/32 luster	95-97½
3/36 luster	1.10-1.12½

KNITTING YARNS

Dyed and Bleached—Bradford System

2/7s straight 1/4 blood	85-87½
2 and 3 ply 10s-20s straight 1/4 blood	90-92½
2 and 3 ply 20s-24s straight 1/4 blood	92½
2 and 3 ply 24s-28s straight 1/4 blood	95

(Reduce 8c. for yarn in oil)

FRENCH SPUN YARN

1/20 1/4 blood	80
1/20 high 1/4	80-82½
1/20 3/8	88
1/20 high 3/8	90
1/20 1/2 blood	92½-95
1/30 1/2 blood	94-96½
1/40 1/2 blood	95-97½
1/50 delaine	1.02½-1.05
1/40 Australian	97½-1.00
1/50 Australian	1.07½-1.10
1/60 Australian	1.17½-1.22½
1/70 Australian	1.25-1.27½

Edward Jefferson & Brother

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Worsted Machinery

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PHILADELPHIA, PENNA.

William Whitman Co.
COMMISSION MERCHANTS
COTTON and WORSTED YARNS
BOSTON NEW YORK PHILA. CHICAGO CHARLOTTE

JAMES LEES & SONS CO.
MINERVA MILLS
Spinners of WORSTED YARNS
For Weaving and Knitting
In the Grey and in all colors and mixtures
Philadelphia Office: 627-29 Bourse Bldg.
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77 Summer St., Boston
COTTON YARNS
of all descriptions
Correspondence Solicited

HAROLD R. SHIRLEY
242 Chestnut St., Philadelphia, Pa.
French Spun Worsted and Merino Yarns
Bradford Spun Yarns
Woolen Yarns
FOR WEAVING AND KNITTING

WOOL YEAR BOOK

In one volume are given outlines of woolen yarn manufacture, worsted yarn manufacture, on both English and French systems, weaving and finishing. There are numerous useful calculations, tables, recipes and notes. Brought up to date annually. 600 pages; green flexible leather. **Price, $1.00.**

Catalogue of Textile Books sent free

Lord & Nagle Co., Textile Publishers
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SOAPS **HIGH GRADE** SOAPS
Bleaching, Fulling and Scouring
SOAPS
Red Oil and Olive Oil Crown Soaps
J. O. Draper Co. Est. 1860 **Pawtucket, R. I.**

For two ply knitting twist add 5c. additional to above prices.

For two ply weaving yarns add 7 1/2c. additional to above prices.

FRENCH SPUN MERINO YARNS—FINE ONE-HALF BLOODS

Standard Grade

1/20 50/50 White Merino Cop	70
1/30 50/50 White Merino Cop	72
1/40 50/50 White Merino Cop	74
1/20 60/40 White Merino Cop	75
1/30 60/40 White Merino Cop	77
1/40 60/40 Whiee Merino Cop	79
1/20 70/40 White Merino Cop	80
1/30 70/30 White Merino Cop	82
1/40 70/30 White Merino Cop	84
1/20 80/20 White Merino Cop	85
1/30 80 20 White Merino Cop	87
1/40 80/20 White Merino Cop	89
Sliver and Sanitary Mixes	3c. more
Coning on 1/20	2c. more
Coning on 1/30	3c. more
Coning on 1/40	4c. more

WOOLEN AND MERINO YARNS

Outside of the spinners making up yarns for foreign government orders such as heavy weight hosiery and underwear, there is scarcely anything doing. Prices have advanced to such a point that the domestic trade will not buy. Knitters are compelled to hold off in their purchases of woolen yarns for the reason that they positively cannot get their prices for the manufactured articles based on the prices for woolen yarns which have advenced from 10 to 15 cents per pound and are going still higher. There are some inquiries for yarns, but when the actual price is quoted to the consumer he will not buy. Under ordinary conditions a normal amount of business could be done in woolen yarns, but as things are just now there is nothing doing. There will be no improvement until a satisfactory adjustment of both raw stock and yarn prices is made.

WOOLEN AND MERINO YARNS

2/20 Light Grey Mixed	80%	20%	65
2/20 Light Grey Mixed	90%	10%	67½-70
2/20 Light Grey All Wool			70-72½
2/20 Colored All Wool			65-75
2/20 Bleached	80%	20%	75
2/20 Bleached	90%	10%	77½
2/20 Bleached All Wool			80-82½
2/23 Colored All Wool			75
2/23 Bleached 90/10			85
2/23 Bleached All Wool			87½-90
2/25 Light Grey Mixed All Wool			90
2/25 Bleached All Wool			97½-1.00

North Carolina, Kannapolis. During 1915 the Cabarrus Cotton Mills will build an addition to take care of growing demands for their products.

THE RAG AND SHODDY MARKET

The demand for rags of all kinds continues far beyond the supply. Stocks have grown smaller, although sales have been restricted by the inability to secure space on steamships for Europe. Quotations are largely nominal because of the abnormal conditions prevailing everywhere. The ordinary grade marks have lost their customary significance because graders have been able to change the actual grades without changing the marks. The shoddy mills are fairly busy, but for quick delivery, some of this trade being on stock for army goods. The trade is at sea and the most experienced men are unable to make plans for any considerable period, but are watching developments from day to day.

SHODDIES AND EXTRACTS

White knit	30-35
Red flannel	18-20
Red knit	20-21
Thibelts	17-18
Fine dark merino No. 1	14-15
Fine light merino	23-25
Fine black merino No. 2	15-16
Light delaine	20-21
Mixed delaine	12-13
No. 1 dark worsted	16-17
No. 2 dark worsted	14-15
Black worsted	16-17
Fine dark worsted clips	19-20
Blue serge, old	15-16
New blue clip	16-20
New black fine worsted clip	24-25
Light yarn, fine	28-30
Dark mixed, fine yarn	22-24
Dark blue hosiery clips, No. 1	17-20
Dark Blue hosiery clips, No. 2	14-16

NEW WOOLEN RAGS

Fine merchant tailors	11-12
Choice light worsted	15-16
Fine gray worsted	18-19
Coarse gray clips	11-11½
Fine dark worsted	12-13
Black worsted	18-19
Blue worsted	18-20
Brown worsted	14
Blue serge	18-21
Black serges	16-18
Light serges	18-20
Dark fancies	11-12
Dark serges	11-12
New blue flannel	13-14
New scarlet flannel	18-20

SOFTS AND KNIT STOCK

Soft woolen, best	8¾-9
Red flannel	10½-11
White softs	22-23
Merinoes, fine light	17
Thibelts	11
Knit stock, red	13¾-14
Light gray, underwear	11-11½
Coarse gray	15
Blue knit	11
Mixed hoods	7½-8½
White knit stock	24-25

North Carolina, McAdenville. A new water wheel has been received by the McAdden Mills.

Mississippi, Batesville. A company has been organized under the name of the Batesville Fibre Company, with capital stock of $30,000, and has taken over the old plant of the Panola Cordage Company and added a bleachery.

You Save Enough Insurance to Pay for the Equipment

So it costs you NOTHING to have the AMERICAN WATCHMAN'S CLOCK. Fully approved by all insurance companies. We equip factories with Fire Alarms, Signals, etc., also Employee's Time Recorders, and Telephone Systems. Electric Time System consists of Master Regulator in office with secondary electric clocks throughout the mill, insuring accurate time. Send for particulars.

Pettes & Randall Co., 150 Nassau St., New York

OTTO KUNZE

2542 Seventh Avenue, New York City

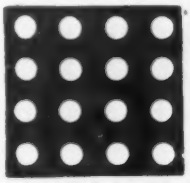
Our Specialty: Fibre Covered Shuttles Of Every Description

Samples sent on application

Woolen and Merino YARNS

Eaton Rapids Woolen Mills

EATON RAPIDS, MICHIGAN



Perforated Plates for Wool Washing

Rinsing and Carbonizing

In Special Metal

BECKLEY PERFORATING CO.,

Garwood, N. J.

OAK TANNED LEATHER BELTING

AND

PICKER AND ROLLER COVERING LEATHERS

CHARLES BOND CO., 520 Arch St., Philadelphia

Dependable Yarns for All-Silk and Silk-Mixture Goods

Hundreds of prominent manufacturers of silk and silk-mixture goods have found it profitable to use and *continue* to use

Cheney Silk Yarns

as the basis of their products. These manufacturers are putting out quality goods and naturally require *quality yarns*. No better proof of the quality of Cheney Silk Yarns can be found than the fact that such manufacturers have sufficient confidence to buy them regularly and place their own names on the finished product.

Resist dyed yarns for cross dyeing of woolen mixtures, special silks for electrical and insulation purposes, and all other specials or staples delivered promptly. Quotations and samples gladly sent.

CHENEY SILKS

are of superior quality, and include practically every kind of goods made of silk—whether for dresses, millinery, decoration or upholstery, the haberdasher or manufacturer, man or woman.

CHENEY BROTHERS *Silk Manufacturers* 4th Avenue and 18th Street, New York

National Silk Dyeing Co.

Main Office, PATERSON, NEW JERSEY, 140 Market Street

NEW YORK SALESROOM, 60 UNIVERSITY PLACE

Skein Silk Dyeing of every description for every class of textile manufacture.

Hosiery Dye—Boil-off, weighting and dyeing, treated especially to meet the requirements of the hosiery and knitting trade.

Piece Dyeing and Finishing—All silk and silk mixed goods.

Printing—Surface and warp printing.

WORKS:

Paterson, N. J. Dundee Lake, N. J. Allentown, Pa. Williamsport, Pa.

THE SILK MARKET

The raw silk market shows much more activity than our last report, although the prices are advancing to some extent. Whether or not this advance will continue no one at this time is able to predict.

In Yokohoma the market is reported as very quiet and little activity shown, although an easier tendency in prices is apparent. It is thought by some that this market may eventually decline from the high prices quoted of late.

In Canton, the market is reported as very strong and prices maintained. Much silk is being sold, but the supply is so great that there is plenty of raw silk to be had and prices will probably not be any lower at present.

In Italy the market is firm and holders of raw silk are maintaining prices. This is likely to be the situation for some time to come, unless this country should be involved in the war.

The broad silk trade shows a decided improvement in the amount of business done. It is stated that the broad silk mills are all running at 80 to 85 per cent. of their capacity. Since our last report, manufacturers have been in the market and quite an active buying has taken place, which indicates they expect a good demand for their product. The broad silk trade will be benefited by the increase in the width of skirts, which will increase the consumption to a considerable extent.

The ribbon manufacturers are not having any perceptible increase in their output, although it is thought that the new fall styles may require more of their product for trimming purposes.

The dry goods districts, while not busy, are showing an increase in the demand for the finished product and they are very hopeful for a good season's business. Two new silk fabrics are meeting with a good demand, known as "Grode Londre" and "Georgette Crepe". Both of these promise well for the future. Moires are not as popular, but are used principally for trimming. Crepe velours have come back and the manufacturers of this fabric see a good demand ahead. This is also true of taffetas, chiffons, poplins, crepe de chene, and, in fact, all soft finished silks.

It seems proper to predict at this time that the silk industry is getting back to its own. The tide has turned and the trade is optimistic. Below are prices current:

European

Grand Extra Classical Piedmont	$3.90-4.00
Extra Classical Italian 12/14 12/16	3.65-3.70
Classical Italian 13/15 24/26	3.50-3.55
Best No. 1 Italian 13/15 24/26	3.45-3.50

6 months' basis

VILLA, STEARNS COMPANY
Telephone, 6174 Gramercy
American Woolen Building
221 Fourth Avenue, New York
RAW AND THROWN SILK
Silk on Spools, Cones, Quills, Beams
DYED SILK FOR ALL PURPOSES
Philadelphia Office:
519 Bourse Building
Providence Office:
Howard Building

KROUT & FITE MANUFACTURING CO.,
MANUFACTURERS OF
Silk, Cotton and Mercerized Narrow Fabrics
SPOOL TAPES A SPECIALTY
TELEPHONE CONNECTION
OFFICE AND MILL ALLEGHENY AVE. AND EMERALD ST., PHILADELPHIA

SAUQUOIT SILK MFG. CO.
INSULATING AND BRAIDING SILKS
ORGANZINE, TRAM AND HOSIERY SILKS
Fast Dye Organzines for Woolen Manufacturers a Specialty
Mills: Bethlehem, Pa., Philadelphia, Pa., Scranton, Pa. New York Representative, Wm. Ryle & Co., 225 Fourth Ave.
Philadelphia Office, 4015 Clarissa St., Nicetown
Chicago Office, 206 So. Market St. Boston Office, 78 Chauncey St.

WILLIAM RYLE & CO.,
FOREIGN AND DOMESTIC
SPUN SILK YARNS and NOILS
Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.
225 Fourth Ave., Corner 18th St., NEW YORK CITY

CONSULTING SILK SPECIALIST
JAMES CHITTICK
122 EAST 25th STREET, - NEW YORK
Costs Calculated, Advice Given on Mill Matters, Damaged Goods, and on Textile Questions of every kind
Mill Properties Reported On
Also Author and Publisher of the Book
"Silk Manufacturing and Its Problems"
580 pages 9x6, price $2.80 delivered
Deals with all phases of Manufacturing, Distributing, Financing, etc. Prospectus sent on request.

SILK MILL SUPPLIES
OF EVERY KIND AND DESCRIPTION
Also Power Transmission Supplies for General Mill Use
I. A. HALL & CO. Paterson, N. J.
Allentown Reed, Harness and Mill Supply Co. Allentown, Pa.

United States Conditioning & Testing Company
Cotton, Wool and Silk Conditioning
Fabric Testing and Chemical Analyses
Offices and Laboratories, 340-44 Hudson St., (cor. Charlton St.)
NEW YORK
D. E. Douty, Mgr. F. G. Boye, Supt. K. B. Lamb, Chem. Eng.

LUDWIG LITTAUER
Tram, Thrown Silk, Organzine, Artificial Silk
Domestic and Imported, Plain, Gassed and Mercerized. Polished and Glazed Cotton, Mohair, Worsted and Tinsel.
Best Quality Harness Twine
107-109 Greene St., New York
Silk Throwing Mills, BEACON and YONKERS, N. Y.
YARNS

MACUNGIE SILK COMPANY
Macungie, Pa.
Bindings and Ribbons
For binding Cotton and Woolen Bed Blankets, Go-cart Covers, Kimonas, Bath Robes, etc.
Special Colors or Shades made to order

Alexander Smith & Son
Warping and Winding on Commission
Work Done on Frames with Swiss Motion
All Goods Fully Insured
Raw Silk Warping a Specialty
Cor. Centre and Glendale Streets EASTON, PA.

F. ROLKER
23 East Twenty-Sixth Street, New York
Importer and Dealer in all kinds of
RAW SILK
In the Skein or on the Beam. Tel. Mad. Sq. 8868

THE POHL MACHINE CO. 230 EAST 79th ST. NEW YORK
SPECIALTY PASTES FOR
ARTIFICIAL SILK, SILK THREAD FINISHING MACHINES, CREY SILK WARPS. ALL SILK PASTES CONTAIN BEESWAX
PASTES FOR COTTON (ROSIN PASTE). SAMPLES CHEERFULLY SENT OR WE WILL MATCH YOUR SAMPLE. SPECIAL PASTE PREPARED ON REQUEST.

Japan

Filature Kansai Extra Extra	3.55-3.60
Filature Kansai Extra 13/15	3.40-3.45
Filature Shinshu Extra 13/15	3.35-3.37½
Filature Kansai Best No. 1	3.25-3.27½
Filature Kansai No. 1 13/15	3.20-3.22½
Filature Shinshu No. 1 13/15	3.10-3.15
Rereels No. 1 13/16	Nominal
Rereels No. 1 1/2 13/16	Nominal
Rereels No. 1 1/2-2	Nominal

6 months' basis

China

Canton XXA 14/16 (new silk)	2.85-2.90
Canton XXB 14/16	2.65-2.70
Tsatlee Blue Dragon and Flying Horse	2.70-2.75
Tsatlee Kun Kee Mars No. 1	2.45-2.50
Tussah Filature Eight Cocoon No. 1-2	1.10

6 months' basis

SPUN SILK

The business with the spun silk manufacturers has shown a slight increase since our last report. There has been no great demand, but a better feeling has manifested itself in the trade. Owing to this situation, the manufacturers believe that the spun silk industry will again reach its normal condition in the near future. The prices remain unchanged with no indication of an advance.

60/2	3.80
50/2	3.70
40/2	3.60
30/2	3.45
20/2	3.35
10/2	3.25

ARTIFICIAL SILK

The artificial silk industry remains in the same condition as at the time of our last report and manufacturers are finding business very quiet. There is a little demand for this product, but conditions in Europe are such that orders cannot be filled promptly. Below are prices current:

150 Deniers English A.—bleached	1.95
150 Deniers English B.—bleached	1.85
150 Deniers English C.—bleached	1.57

SILK.

.....

New Mills.

Pennsylvania, York. John H. Kessler, 1400 W. King St., West York, has leased a vacant factory building between King St. and the railroad tracks, West York, from the Western National Bank, the owners, and will equip it as a silk mill, manufacturing under the name of the Western Silk Company. The building contains about 12,500 square feet of floor space.

.....

Enlargements and Improvements.

Connecticut, Willimantic. The Rossie Velvet Company of Mystic and Willimantic, has had a good year and there is a possibility that the branch plant in Willimantic will be enlarged. The branch plant occupies a building owned by the Willimantic Industrial Company and at the annual meeting of that organization it was stated that the silk company is crowded for room and will undoubtedly demand further accommodations. To provide for the enlargements the directors were authorized to exchange land owned by the Willimantic Industrial Company for land owned by other parties so that the company can develop its plant when necessary.

*Delaware, Marshallton. Frank F. Spicer has started to rebuild his small broad silk weaving plant which was destroyed by fire about ten days ago.

New Jersey, Paterson. Abbott & Kohn, silk manufacturers, formerly located at 20 Olive St., have removed to larger quarters at 235 Ellison St., and increased their capacity one-third. They are experimenting along the line of finishing messaline woven in the gray.

New Jersey, Paterson. Eighteen broad silk looms have been added to the equipment of the Berlin Shawl Company, Inc., 48 Straight St., and they now make both silk and honeycomb shawls. Louis Green, formerly secretary and treasurer, is not connected with the concern at this time, and Daniel Green is both president and treasurer.

SPUN SILK
YARNS FOR ALL PURPOSES
AMERICAN SILK SPINNING CO., PROVIDENCE, R.I.

MINDLIN & ROSENMAN
Importers and Manufacturers of
Our Specialty:
DYED SILK FOR THE KNITTING TRADE
on cones and tubes
RAW and THROWN SILK, ARTIFICIAL SILK
Mercerized and Cotton Yarns, Yarns and Threads
105-107 East 29th St., near 4th Ave., New York
Factory and Dyehouse, Brooklyn, N. Y.

A. P. Villa & Bros.

Raw, Thrown and Dyed Silks

Silk on Quills or Beams. Hosiery Silk on Cones

Societa per la Filatura dei Cascami di Seta, Milan (Italy)
Cascami Silk Spinning Company of America

"Cascami"

Schappe, Spun Silk, Cordonnets for Sewing in Skeins—on Cops—Spools —Cones—Beams.
In Gray or Dyed.
Special attention to regularity of sizes.

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Sole Agents for the United States and Canada

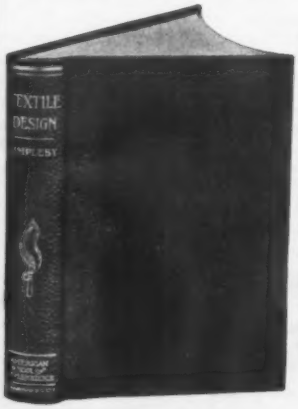
Emmett Building, 95 Madison Avenue, New York

Tel. 10080 Madison Square Mills: Passaic, N. J.

Textile Design

By FENWICK UMPLEBY

For Cotton, Wool, Worsted and Silk



Beginning with the use of design paper the subjects of designing plain cloths, double and triple cloths, pile fabrics, and jacquard designing are covered. Includes chapter on cost finding. 350 pages, 400 designs and illustrations, half leather binding.

Price $2.25
Express paid

LORD & NAGLE CO., 144 Congress St.
Boston, Mass.

SILK.

New Jersey, Paterson. The Goldy Ribbon Co., 178 Water St., has increased its equipment from 36 looms to 91 looms. Morris A. Goldstein is president; Samuel Goldstein, treasurer, and Lewis H. Goldstein, secretary.

New Jersey, Paterson. The equipment of the Gorin, Blake Silk Co., manufacturers of broad silks at 18 Paterson St., has been increased to 28 looms.

New Jersey, Trenton. The business of the Scientific Textile Company has been incorporated with capital stock of $25,000. A silk throwing, winding, doubling, twisting and converting plant is operated at Peace and Lafayette Sts. It is planned to equip an addition of 2,000 spindles for several new processes and some of this additional equipment will be in operation early in February. George W. Sayles is president; H. H. Lowe, vice-president, and Henry Kellerman, treasurer, general manager and buyer.

*New York, Port Jervis. Machinery is being placed in the new mill of Kattermann & Mitchell Company. The building is 250 feet long and 50 feet wide, 2 stories high, and is as nearly fireproof as it can be made. It is constructed of concrete with metal sashes. The stairways are concrete and iron, and are enclosed by partitions and metal covered doors. This new mill will take the place of the old branch mill in Port Jervis. The equipment will be 700 spindles and 200 looms for making broad silks. James A. Wylie is superintendent and August Kattermann is president.

Pennsylvania, Easton. The Roehlin-Pittenger Silk Company are now established in their new location and are installing a small amount of new machinery.

*Pennsylvania, Marcus Hook. The American Viscose Company expect to have their new 5-story building under roof this week and ready for machinery in about a month.

Mills Starting Up.

*Pennsylvania, Allentown. The plant of the Keystone Textile Company in South Allentown has been transferred to the Orion Textile Company, recently organized as noted, of which Charles Messmer is president. The Keystone Mill closed last October. Mr. Messmer was with Schwarzenbach, Huber Company for many years and for the past two years has been superintendent of the D. G. Dery plant at East Mauch Chunk. He has moved to 622 Cleveland Street, Allentown, and will reopen the Keystone Mill in a week or two, starting up the machinery gradually.

MISCELLANEOUS.

Canada, Ontario, Guelph. The plant of Dominion Linens, Ltd. here, formerly known as the Dominion Linen Mfg. Co., and the branch plant at Tillsonburgh, formerly known as the Oxford Linen Mills, are in operation. Both linen and cotton goods are being made in the Guelph plant

and they have installed electric power equipment, using steam only for bleaching and heating. The company has capital stock of $300,000. David M. Sanson is president; R. Dodds, vice-president, and J. A. Mills, secretary and treasurer. All business is done at the Guelph plant.

Connecticut, East Hampton. The new storehouse of the Summit Thread Company, built on the foundation of the old one recently burned, has been completed. A blacksmith shop has also been constructed.

Massachusetts, Brockton. The Star Webbing Works on Skinner St., manufacturers of narrow woven fabrics, plain and jacquard goods, have added 18 looms, making a total of 43 looms in the plant.

Massachusetts, Gloucester. A charter has been granted the R. E. B. Mfg. Company with capital stock of $1,000 to waterproof cloth and other articles. The incorporators are Harry R. Roberts, president and treasurer; Frank S. Bartlett, clerk, and Ernest W. Ellis. The new concern has secured a building and will convert and waterproof textile fabrics. Mr. Roberts is a dentist at the Hotel Bristol, Boston. Mr. Bartlett will be the outside representative and Mr. Ellis will have charge of the plant.

*Massachusetts, Holyoke. The new quarters secured by the W. H. Bullard Thread Company at 9 Suffolk St. do not provide as much space as the old plant on Main St. which was recently burned, and only a little new machinery has been bought or will be required until larger quarters are occupied, and Mr. Bullard does not expect to make any further changes for the present at least. The Bullard Thread Company has been changed from a corporation to private ownership, W. H. Bullard having bought the outstanding stock. The business will be conducted in future under the style of the W. H. Bullard Thread Company and operations will be started in the new quarters about the middle of the month.

Michigan, Port Huron. It is reported that the plant of the Summers Linen Company, which was destroyed by fire several months ago, is to be rebuilt on a larger scale. The concern manufactures linen rugs and novelties.

New Jersey, Camden. Peech Sons & Phillips Co., winders, coners and mercerizers of cotton yarns, report that the year just closed with them was a fairly good one and in anticipation of largely increased business for this year, numerous inquiries for yarns being already received by them, they have in contemplation the matter of making considerable improvements to their present plant. These improvements will consist of new buildings to be erected and other portions of the plant enlarged as well as the installation of new machinery in all their different departments, which will enable them to enlarge their output and meet any demands made upon them for yarns required by the trade.

New Jersey, Paterson. The Imhoff-Berg Silk Dyeing Company will double its plant in March. Black skein dyeing is done and the present capacity is about 2,000 pounds daily. Dr. M. Imhoff is president, and O. Berg, treasurer.

Cooper Hewitt Lighting "Improves With Acquaintance"

You, some day, may be added to the list of those who inform us from their *individual experience* that Cooper Hewitt Lighting "improves with acquaintance."

You can never arrive at such a point of appreciation without making a trial installation in some part of your plant where you and your employees can together work out your own conclusions.

You must already have seen and heard much in favor of Cooper Hewitt Lighting—but are you satisfied without having investigated with a view to increasing and improving the quantity and quality of your product; of getting greater and quicker results from your employees; of reducing the cost of your lighting?

Realize that Cooper Hewitt Lamps have been half watt lamps for years. And for years they run on practically without interruption or attention.

Write, phone, call or wire our nearest office for information.

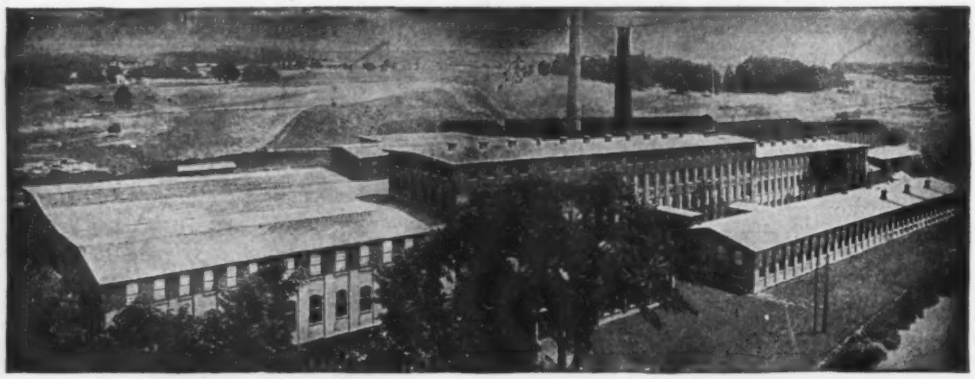
"The Lighting That Improves With Acquaintance"

Send for Bulletin 747

Cooper Hewitt Electric Company

8th and Grand Sts., Hoboken, N. J.

Boston, 161 Summer St. Detroit, Ford Bldg.
Chicago, 215 Fisher Bldg. Minneapolis, Andrus Bldg.
Cincinnati, 1st Nat. Bk. Big. Philadelphia, 124 So. 8th St.
Cleveland, Engineers' Bldg. Pittsburgh, Westingh'se Big.
St. Louis, Central National Bank Bldg.



UTICA WILLOWVALE BLEACHING CO.

Sheetings, Shirtings, Lawns, India Linons.
Everything in White Goods.
Capacity, 30 Tons Daily

JOHN MacMANUS, Manager — CHADWICKS, N. Y.

VICTOR MILL STARCH

THE WEAVER'S FRIEND

IT BOILS THIN. PENETRATES THE WARPS. INCREASES BREAKING STRENGTH. THE STANDARD SIZING AND FINISHING STARCH FOR TWELVE YEARS. A TRIAL WILL CONVINCE YOU.

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SOUTHERN AGENT - - JAMES H. MAXWELL, GREENVILLE, S. C.

FIRE, LIGHTNING, WINDSTORM.

The HOME INSURANCE COMPANY NEW YORK

Elbridge G. Snow, President

Organized 1853 MAIN OFFICES, 56 CEDAR ST.

Cash Capital, $6,000,000

ASSETS, January 1, 1914.....$33,139,915.81
LIABILITIES (Except Capital)..... 17,066,896.12
SURPLUS AS REGARDS POLICY HOLDERS.. 17,873,019.69
Losses Paid Since Organization over 145,000,000.00

INDEMNITY
For Loss of
Profits
Commissions
Use and
Occupancy
on acceptable
Protected Plants
at the
Minimum Rate

IS prepared to entertain liberal lines on Sprinkler-Equipped and Modern Improved risks generally, having a special department for the consideration of such business.

OWNERS OR TENANTS may have for the asking proper advices in relation to the FIRE HAZARD and the Value of Automatic Sprinkler and other protection for the manufacturing or distributing plant. Correspondence invited by the

DEPARTMENT OF IMPROVED RISKS
56 CEDAR STREET, N. Y.

DYESTUFFS AND CHEMICALS

The unsettled conditions in the dyestuff and chemical trades caused by the European situation make it impossible to get quotations which would be of any value to our readers. The dyestuff and chemical list of quotations will therefore be omitted until this trade is again on a normal basis.

FACTS AND GOSSIP.

Alabama, Newton. The Killebrew Woolen Mill Company has succeeded T. J. Killebrew & Son. They manufacture woolen jeans and pants.

Alabama, Ozark. A large order for 22s hosiery yarns has been received by the Ozark Cotton Mill Company, which will keep the mill busy for several weeks.

California, Los Angeles. The Industrial Bureau of the Los Angeles Chamber of Commerce has announced that an unusual number of inquiries have been received from Eastern concerns regarding the industrial possibilities here. It is stated the prospects for the construction of a large cotton mill are exceedingly bright and that a definite announcement may be expected soon.

California, Los Angeles. A Philadelphia hosiery concern will begin operations here shortly, according to the report for 1914 of the Industrial Bureau of the Los Angeles Chamber of Commerce.

California, Los Angeles. The Woodstock Cotton Mills Company has been incorporated with capital stock of $1,000,000 to manufacture all kinds of cotton goods. The incorporators are Harry C. Jackson, C. A. Roberts, L. M. Sullivan, E. E. Whitney, Jr., and E. S. Cummings. Efforts of industrial organizations in southern California to have cotton mills established, has created interest in cotton mill projects.

*Canada, Nova Scotia, Amherst. Plans for the reorganization of the Hewson Pure Wool Textiles, Ltd., which were recently noted, provide for the sale of the property to a new concern to be known as the Eastern Woolen Mills, Ltd. The reorganization committee is composed of G. L. Stairs, J. L. MacKinnon and O. E. Smith.

Canada, Nova Scotia, Amherst. It is expected that a reorganization of the Hewson Pure Wool Textiles, Ltd., will be effected shortly and the mill started up. The equipment includes 11 sets of cards, 40 looms, 90 knitting machines, and 50 sewing machines, on which lines of sweaters, athletic knit goods and tweeds have been manufactured.

Canada, Ontario, Dunnville. The Erie Woolen Mills of John Slingsby are idle and are being offered for sale.

Canada, Ontario, Toronto. The capital stock of the Canadian Dyers' Association, Ltd., has been increased from $40,000 to $110,000. They dye and finish dress goods up to 60-inch width.

Barrett Specification Roofs

THE roof is apt to be one of the very last things to be considered in the construction of a building. It really ought to be among the first.

Owners wake up to this fact when they begin to pay bills for repairs and damage caused by leaks.

Permanent buildings deserve permanent roofs.

The most economical and altogether satisfactory permanent roof is a Barrett Specification Roof.

It is for this reason that most of the great manufacturing plants and textile mills of the country, the great railroad terminals and skyscrapers carry roofs of this type. Some of these are from twenty to thirty years old and are still in serviceable condition.

A copy of The Barrett Specification, with roofing diagrams, mailed free on request to any one interested.

Special Note: We advise incorporating in plans the full wording of The Barrett Specification in order to avoid any misunderstanding. If any abbreviated form is desired, however, the following is suggested:

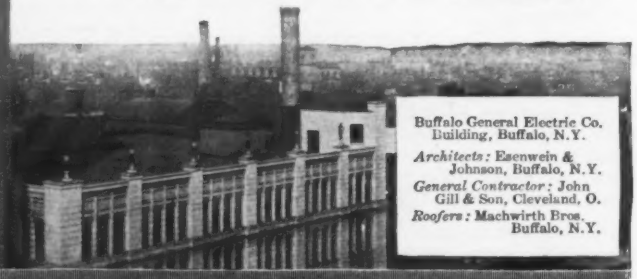
ROOFING—Shall be a Barrett Specification Roof, laid as directed in printed Specification, revised August 15, 1911, using the materials specified and subject to the inspection requirement.

BARRETT MANUFACTURING COMPANY

New York Chicago Philadelphia Boston
St. Louis Cleveland Cincinnati Pittsburgh
Birmingham Kansas City Minneapolis Detroit
Salt Lake City Seattle

TRADE B MARK

THE PATERSON MFG. CO., LIMITED, Montreal
Toronto Winnipeg Vancouver St. John, N. B. Halifax, N. S. Sydney, N. S.



Buffalo General Electric Co. Building, Buffalo, N.Y.

Architects: Esenwein & Johnson, Buffalo, N.Y.

General Contractor: John Gill & Son, Cleveland, O.

Roofers: Machwirth Bros. Buffalo, N.Y.

MILL STOCKS

Owing to the disturbed financial relations, current quotations of mill stocks are nominal. Following are the quotations previous to the breaking out of the war:

NEW BEDFORD MILLS

	Bid.	Asked.
Acushnet Mill	137½	...
Beacon Mfg. Co., com.	102	...
Beacon Mfg. Co., pfd.	...	115
Booth Mfg. Co., com.	...	21
Booth Mfg. Co., pfd.	...	47½
Bristol Mfg. Co.	...	67½
Butler Mill, com.	...	90
Butler Mill, pfd.	...	100
City Mfg. Co.	...	92
Dartmouth Mfg. Co., com.	127½	...
Dartmouth Mfg. Co., pfd.	97½	...
Gosnold Mfg. Co., pfd.	...	89
Grinnell Mfg. Co.	...	180
Holmes Mfg. Co., com.	104	...
Holmes Mfg. Co., pfd.	105	...
Kilburn	118	...
Manomet	...	114½
Nashawena Mills	...	66
N. B. Cotton Mills Co., com.	100	98½
N. B. Cotton Mills, pfd.	96	...
Neild Mfg. Co.	...	95
Nonquitt Spinning Co.	...	94
Page Mfg. Co.	...	77½
Pierce Mfg. Co.	295	300
Pierce Bros., Ltd.	100	...
Potomska Mills	115	...
Quissett Mills, com.	...	98
Quissett Mills, pfd.	100	102½
Sharp Mfg. Co., com.	...	85
Sharp Mfg. Co., pfd.	...	100
Soule Mills	...	80
Taber Mills	...	100
Wamsutta Mills	115	119
Whitman Mills	114½	123

SOUTHERN MILLS

	Bid.	Asked.
Abbeville	85	100
American Spinning Co.	155	...
American Spinning Co., pfd.	100	...
Arkwright Mills	...	100
Aragon, com.	59	...
Avondale	120	125
Arlington	130	...
Brogan Cotton Mills (new series)	...	81
Brookside	...	...
Cannon	125	...
Cabarrus	120	...
Chadwick-Hoskins	...	...
Chadwick-Hoskins, pfd.	...	101
Chiquola Cotton Mills, pfd.	80	...
Clifton, com.	80	...
Clifton, pfd.	96	100
Clara	100	...
Cliffside	190	...
Columbus Manufacturing Co.	...	85
Darlington	75	83½
Drayton	29	...
Erwin, pfd.	...	105
Easley	...	125
Exposition	...	210
Florence	125	128
Gaffney Manufacturing Co.	59	...
Gibson, com.	109	110
Gluck	...	100
Graniteville, S. C.	140	152
Grendle	...	96
Glenwood	...	150
Glen Lowry, pfd.	...	76
Highland Park	200	203
Highland Park, pfd.	...	102
Hartsville	175	195
Hartsville, pfd.	...	100
Henrietta Mills	...	117
Inman, com.	...	108
Inman, pfd.	...	100
Kesler	...	160
Lancaster Cotton Mills	130	...
Lancaster Cotton Mills, pfd.	96	...
Lanet	...	112
Laurens	127	136
Limestone	...	126
Lockhart, S. C.	...	72½
Loray Mills, pfd.	...	86
Modena	...	150
Mollohon	...	101
Monarch, S. C.	115	...
Newberry	125	...
Norris Mills	...	121
Ninety-six	130	140
Orr	...	86
Ozark	100	110
Parker Mills, com.	7	10
Parker Mills, pfd.	30	35
Parker Mills, guar.	...	88½
Pacolet Mfg. Co., com.	...	108
Pacolet Mfg. Co., pfd.	100	...
Patterson	129	...
Pelzer Manufacturing Co.	125	164
Piedmont Manufacturing Co.	150	167
Pell City, Ala.	...	80
Poe, W. F., Manufacturing Co.	100	103
Riverside Manufacturing Co.	...	78
Salisbury	150	...
Roanoke Mills	...	156
Saxon	114	...
Spartan	109	...
Toxaway	...	78
Union Buffalo, first pfd.	34	51
Union Buffalo, second pfd.	...	10
Warren Mfg. Co., com.	78	...
Warren Mfg. Co., pfd.	...	107
Washington Mills	7	...
Washington Mills, pfd.	100	...
Woodside Mills Co., com.	...	88½
Woodside Mills Co., pfd.	...	80
Woodside Mills Co., guar.	...	101
Watts	...	85
Williamson	...	125
Ware Shoals	70	...
Whitney	110	120
Wiscasset	140	150
Woodruff	...	107
Woodlawn	120	126
Young Hartsell	70	...

OTHER NEW ENGLAND MILLS

	Par Value.	Last Sale.
Amoskeag Mfg. Co., com., N. H.	100	62
Amoskeag Mfg. Co., pfd., N. H.	100	99½

Androscoggin Mills, Me.	100	137
Arlington Mills, Mass.	100	80
Appleton Co., Mass.	100	172
Bates Carpet Co., Me.	100	213¼
Bigelow Carpet Co., Me.	100	213¼
Boston Duck Co., Mass.	700	1280
Boston Mfg. Co., Mass.	100	85
Cabot Mfg. Co., Me.	100	100
Chicopee Mfg. Co., Mass.	100	90
Continental Mills, Me.	100	75¼
Dwight Mfg. Co., Me.	100	1021¼
Edwards Mfg. Co.	100	99
Essex Co., Mass.	100	187¼
Everett Mills, Mass.	100	112¼
Fisher Mfg. Co., Mass.	100	125½
Franklin Co., Me.	100	201¼
Great Falls Mfg. Co., N. H.	100	172¼
Hamilton Woolen Co., Mass.	100	95
Hamilton Mfg. Co., Mass.	100	77½
Hill Mfg. Co., Me.	100	90¼
Jackson Co., N. H.	1000	985
Lancaster Mills, Mass.	100	75
Lawrence Mfg. Co., Mass.	100	151¾
Lockwood Co., Me.	100	97
Lowell Bleachery, Mass.	100	125
Lowell Hosiery, Mass.	100	40
Lyman Mills, Mass.	100	120
Massachusetts Cotton Mills, Ga.	100	93⅛
Massachusetts Cotton Mills, Mass.	100	116
Merrimack Mfg. Co., com., Mass.	100	245⅝
Merrimack Mfg. Co., pfd., Mass.	100	83½
Middlesex Co., Mass.	100	55
Middlesex Co., pfd., Mass.	100	75
Monadnock Mills, N. H.	100	100
Nashua Mfg. Co., N. H.	500	672½
Naumkeag Steam Cot. Co., Mass.	100	172
Newmarket Mfg. Co., N. H.	100	95
Otis Mfg. Co., Mass.	1000	1852½
Pacific Mills, Mass.	100	107
Pepperell Mfg. Co., N. H.	100	305
Plymouth Cordage Co., Mass.	100	228
Salmon Falls Mfg. Co., N. H.	300	150
Shaw Stocking Co., Mass.	100	75
Suncook Mills, N. H.	100	20
Thorndyke Mfg. Co., Mass.	1000	1305
Tremont & Suffolk Mills, Mass.	100	100⅜
Waltham Bleachery & Dye Works, Mass.	100	140
York Mfg. Co., Me.	100	85

MISCELLANEOUS.

Canada, Quebec, Montreal. It is reported that Canadian clothing manufacturers have been given contracts for $4,000,000 worth of clothing by the British war office, including 500,000 coats and trousers which will require over 1,500,000 yards of khaki cloth. Shipments will be made weekly until the end of March, the terms being "cash on approval." Combined with the orders placed by the Canadian Government for uniforms this should serve to keep the Canadian textile industry busy during the winter.

Connecticut, Broad Brook. Some departments of the Broad Brook Company are running overtime on goods for export.

Connecticut, Bridgeport. One of the buildings of the Barnum & Bailey Circus Company, which has its headquarters here, has been equipped to manufacture tents and ropes. W. H. Lashbaugh, formerly of Cincinnati, is superintendent of this department.

Connecticut, Buckland. It is reported that the E. E. Hilliard Co., Inc., has received an order for overcoatings for export which will require the full production of the plant for a month.

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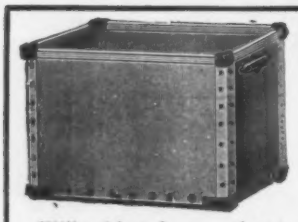

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MISCELLANEOUS.

Connecticut, New Haven. It is reported a textile concern is negotiating for six acres of land on the Quinnipiac River, New Haven, owned by Frank A. Leddy, manager of the Edward Malley estate.

Connecticut, Rockville. The plant of the Rock Mfg. Company is working overtime until ten o'clock at night on an order for cloth for export.

Connecticut, Thompsonville. The Thompsonville plant of the Bigelow, Hartford Carpet Co. has reopened after a shut down of ten days. According to a newspaper report the Bigelow, Hartford Carpet Company may take over the plant of M. I. Whitall at Worcester, Mass. Nothing authoritive has been learned regarding this rumor. A similar rumor was denied several months ago.

Connecticut, Watertown. Arrangements are being made for establishing a new business in the factory building occupied for many years by M. Heminway & Sons Silk Company. This has been idle since the new Heminway plant was completed. The nature of the new industry has not been disclosed.

Connecticut, Willimantic. The hours of work at the Quidnick-Windham Mfg. Company have been increased from 35 to 45 hours a week. The new schedule calls for nine hours a day, five days a week. On Saturdays the mill will be closed. The corporation was recently reorganized as noted. An increase has also been made in the working hours at the American Thread Company where a curtailment has been in force.

Delaware, Wilmington. The Romberger Knitting Company has been incorporated under the laws of Delaware with capital stock of $100,000.

Georgia, Atlanta. The American Tape Company, which made tapes by sizing, has gone out of business.

Georgia, Augusta. Practically all of the cotton mills of Augusta and in the Horse Creek Valley in Aiken County are running to full capacity. Under normal conditions approximately 6,500 operatives are employed. A canvass on the first of the year showed that 6,340 operatives were at work.

Georgia, Sencia. The Senoia Duck Mills property, now owned by the Bank of Senoia, is still idle and for sale. The mill was equipped two or three years ago to weave cotton duck.

Illinois, Chicago. A company has been organized under the style of the Chicago Braid Bow Company to manufacture and deal in braid bows, braids and general merchandise, with capital stock of $5,000. The incorporators are William Kendall, F. E. Morey and O. D. Luby.

Indiana, Sullivan. The Sullivan Woolen Mills have been incorporated with capital stock of $10,000 to carry on a business of woolen manufacturing. The incorporators are W. E. Woods, S. Brunger and W. E. Aydelotte. It is understood the new corporation will take over the plant and business of the Sullivan Woolen Mills which have been conducted by S. Brunger & Company.

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IT is entitled "Lubrication of Textile Machinery" and we have reserved a copy for YOU. If you will promptly send us your address we will be happy to mail YOUR copy. No obligation whatever.

New York and New Jersey Lubricant Co.

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*Kentucky, Louisville. The Bradford Company, recently organized by the bondholders of the old Bradford Worsted Spinning Company who recently purchased the property, may take over the plant, but there is no intention of entering the manufacturing business. The company will simply serve as a convenient medium for handling the assets acquired when the property was purchased. The American Woolen Company is still in possession of the premises and no definite plan is under consideration that would terminate their occupancy.

Maine, Biddeford. It is reported that a plan of reorganization of the Pepperell Mfg. Company is being worked out which will provide for the forming of a company under Massachusetts laws. Massachusetts stockholders own about three-fourths of the stock, according to reports.

Maine, Dexter. The Wassookeag Woolen Company has started operating nights on a large order for uniform cloth for export. It is expected that this schedule will be continued for several months.

Maine, East Wilton. Allen, Lane Company, Boston, who own the Walker Mills property, have received an inquiry from the Farmington Board of Trade regarding the leasing or selling of the Walker Mills and have made propositions for both leasing and selling the property. The Farmington Board of Trade is said to be acting for Everett W. Adams. The Walker Mills have excellent water, but the finishing departments are not equipped to handle the class of goods called for in the various rush orders that are now being placed.

Massachusetts, Norton. A night shift of operatives is being put on at the Talbot Wool Combing Company.

Maine, Kezar Falls. The Kezar Falls Woolen Company is busier now than at any time for several years on overcoatings for export.

Massachusetts, Shirley. The Samson Cordage Works have been connected with the lines of the Connecticut River Power Company, the Cordage Company using about 225 h. p. in addition to the power developed in its own plant.

Massachusetts, South Hadley Falls. It is reported that at a meeting of the directors of the Hadley Mills it was decided to shut down the property for an indefinite period. Replying to inquiries as to the future of the concern, F. Gordon Patterson, the new treasurer, states that their plans are not sufficiently matured at this time to warrant the making of a definite statement.

Massachusetts, Spencer. The Bigwood Woolen Company has resumed full time operations and some departments are running overtime. Union cassimeres are manufactured.

RATS AND CONTRACTS (ANNOUNCEMENT)

72 Front Street, New York, February 1, 1915.

To Mill Owners and Superintendents:

The VIRUS LIMITED INC. of 72 Front Street, New York, wish to announce that they have taken over the business formerly conducted by the DANYSZ VIRUS LIMITED, of the same address and that they are now prepared to accept yearly contracts for the extermination of rats and mice and that in connection with all such contracts the wonderful bacteriological preparation, DANYSZ VIRUS, discovered and prepared by Dr. Jean Danysz of the Pastuer Institute of Paris will be used exclusively. This company also manufactures a roach exterminator of the greatest merit and we will be glad to send a sample of same to those interested in giving same a trial. Write for full information.

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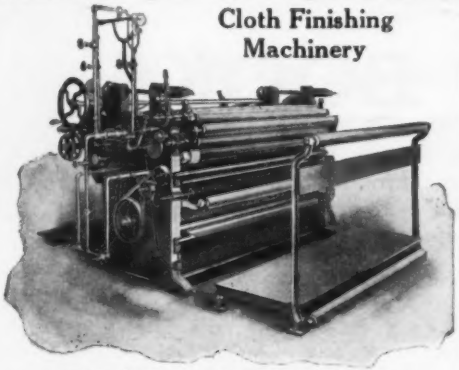

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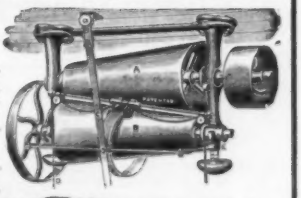

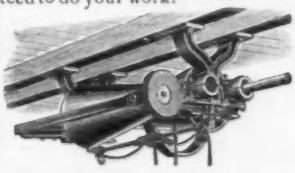

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Advanced Textile Design, *Watson*	$4 00
Analysis of Woven Fabrics, *Barker and Midgley*	3 00
Art of Soap Making, *Watt*	3 00
Calculations in Yarns and Fabrics, *Bradbury*	1 25
Carpet Manufacture, *Bradbury*	3 00
Color in Woven Design, *Beaumont*	6 00
Drying by Means of Air and Steam, *Hausbrand*	2 00
Flax, Hemp and Jute Spinning and Twisting, *Carter*	3 00
Improved Slide Rule, *Hogg*	3 50
Introduction to Study of Textile Design, *Barker*	2 50
Jacquard Weaving and Designing, *Bell*	4 00
Manual of Weave Construction, *Kastanek*	1 00
Preliminary Operations of Weaving, *Nesbitt*	2 50
Science of Knitting, *Tompkins*	3 00
Silk Throwing and Waste Silk Spinning, *Rayner*	2 50
Simplex Tables	50
Spinning and Twisting of Long Vegetable Fibres, *Carter*	5 00
Story of Textiles, *Walton*	3 25
Technical Testing of Yarns and Fabrics, *Herzfeld*	3 50
Textile Design, *Woodhouse and Milne*	3 25
Textile Design, *Umpleby*	2 25
Textile Design and Color, *Watson*	2 50
Textile Fibres, *Matthews*	4 00
Textile Soaps and Oils, *Hurst*	3 00
Textiles, *Barker*	2 00
Warp Preparation and Weaving, *Nelson*	2 25
Waterproofing of Fabrics, *Mierzinski*	2 50
Weaving, Plain and Fancy, *Nelson*	1 25

Cotton Manufacture

Carding and Spinning, *Ivey*	$1 00
Chemistry of Tape Sizing, *Cooper*	1 50
Cotton Carding, *Lindsay*	50
Cotton Cloth Designing, *Holmes*	2 00
Cotton Combing Machines, *Thornley*	3 00
Cotton Manual, *Broadbent*	75
Cotton Mill Machinery and Calculations, *Parker*	1 50
Cotton Spinning, *Hedrick*	3 00
Cotton Spinning (3 vols.), *Taggart*	7 50
Cotton Spinning (3 vols.), *Thornley*	6 50
Cotton Waste, *Thornley*	3 00
Humidity in Cotton Spinning, *Dobson*	1 50
Loomfixing and Weaving, *Ivey*	1 25
Mule Spinning, *Thornley*	3 00
Plain Series of Cotton Spinning Calculations, *Cook*	1 00
Practical Cotton Calculations, *Whitworth*	1 00
Structure of the Cotton Fibre, *Bowman*	3 00
Students' Cotton Spinning, *Nasmith*	3 00

Woolen and Worsted Manufacture

Cone Drawing, *Buckley*	$ 50
Faults in the Manufacture of Woolen Goods and their Prevention, *Reiser*	2 50
Finishing of Textile Fabrics, *Beaumont*	4 00
How to Make a Woolen Mill Pay, *Mackie*	2 00
Manual of Cloth Finishing	6 50
Practice in Finishing Woolens and Worsteds, *Greene*	50
Principles of Wool Combing, *Priestman*	1 50
Principles of Woolen Spinning, *Priestman*	2 50
Principles of Worsted Spinning, *Priestman*	2 50
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Worsted Overlooker's Handbook, *Buckley*	50
Worsted Preparing and Spinning, (2 vols.), *Bradbury and Buckley*	3 00

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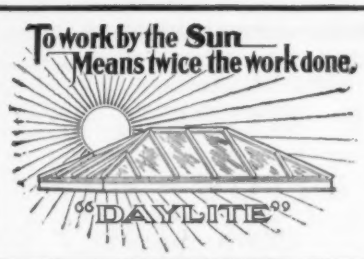

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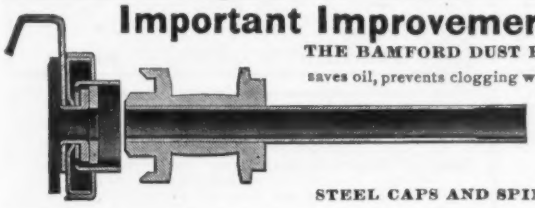

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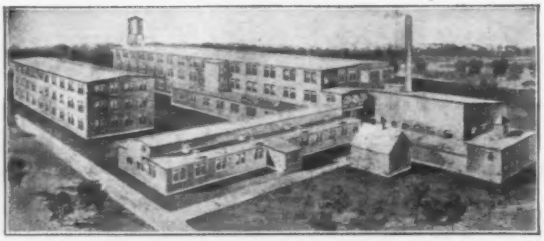

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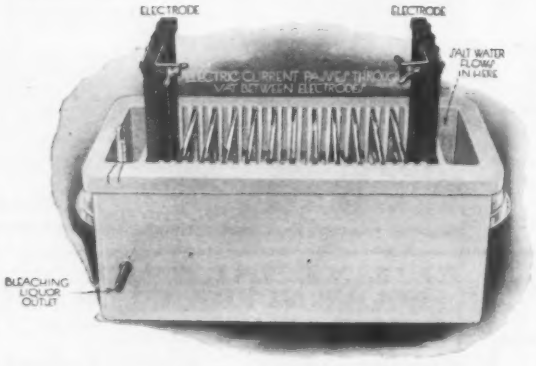

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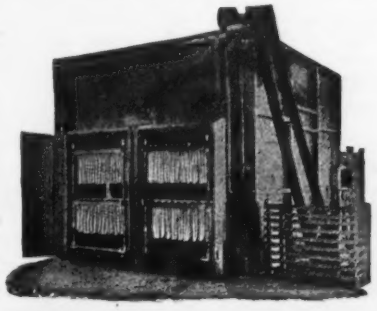

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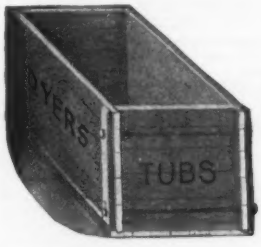

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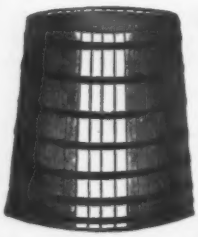

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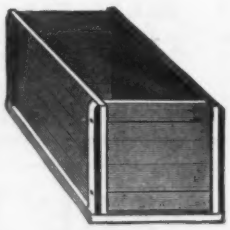

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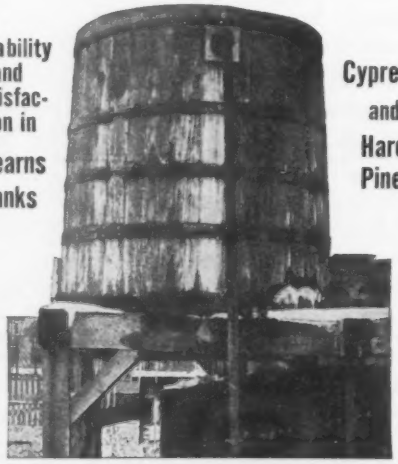

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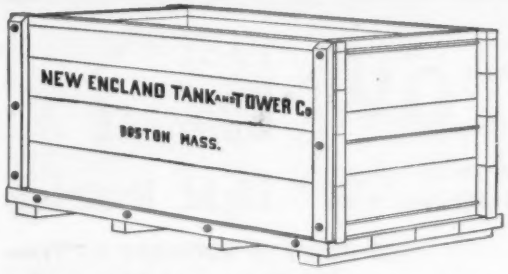

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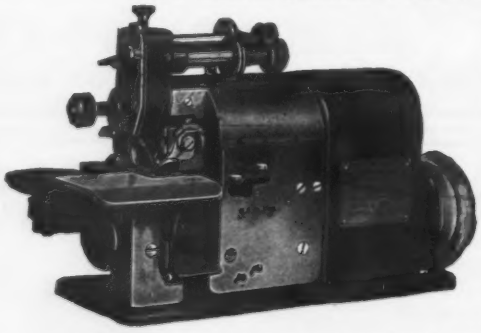

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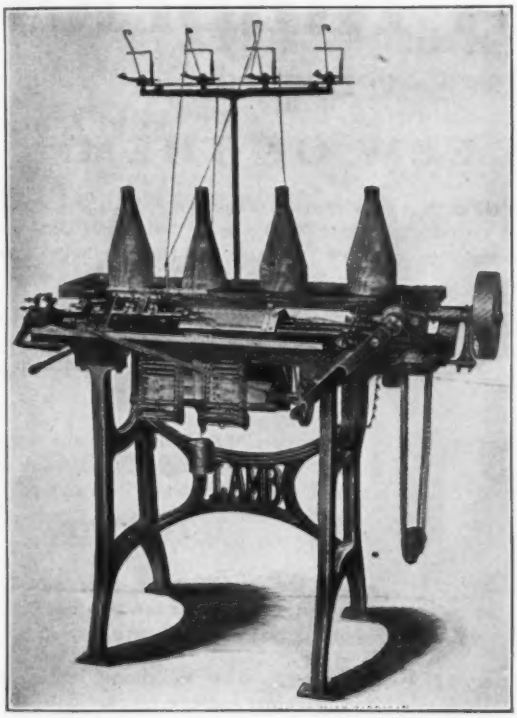

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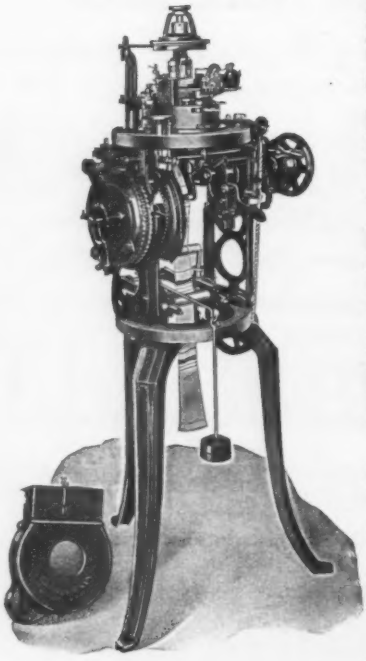

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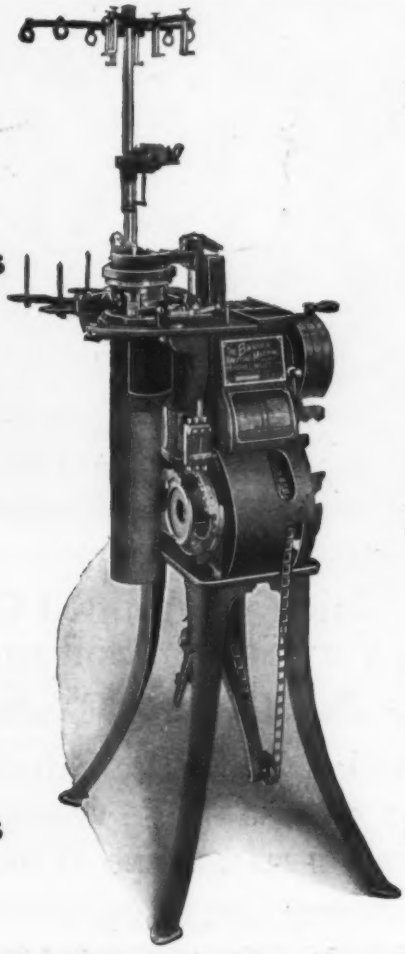

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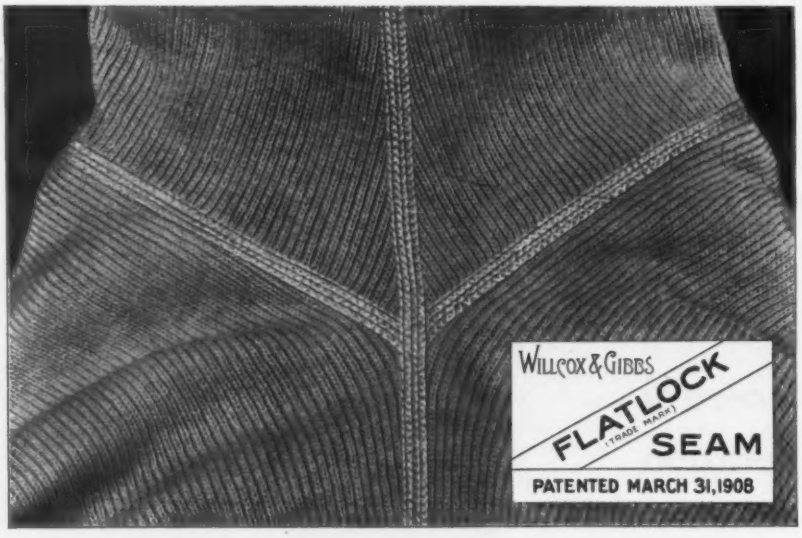

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Chief Office **658 Broadway** Corner Bond Street

New York

Full Fashioned Hosiery Machines

—BUILT BY—

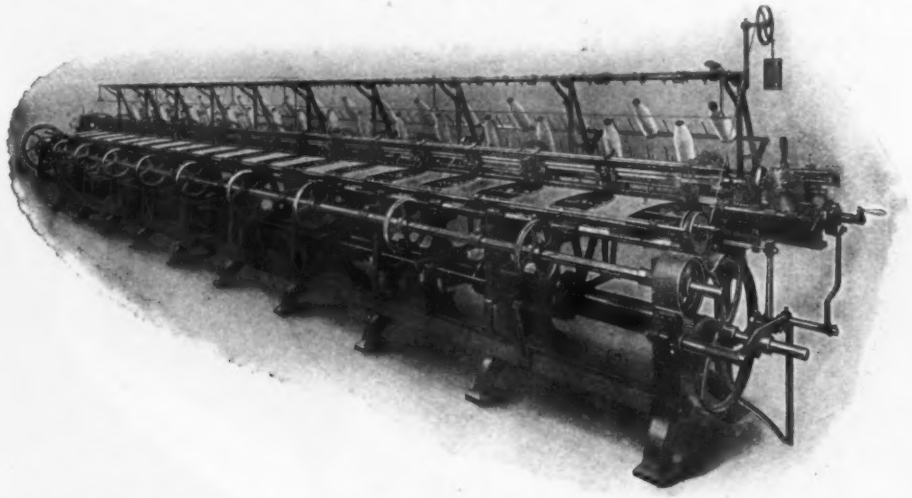
Schubert & Salzer Maschinenfabrik

and their two Branch Works

H. ALBAN LUDWIG and THEODOR LIEBERKNECHT

Chemnitz, Germany

Largest Manufacturers of all Classes of Hosiery Machines



Schubert & Salzer, in addition to the plant of H. Alban Ludwig, have recently acquired the plant of Theodor Lieberknecht and continue to build Full Fashioned Hosiery Machines in each of the three plants, retaining the special features of each individual type and at the same time using on all three machines various patented devices and all the practical attachments known to the trade. These machines are built in all gauges from 14 to 34 needles to the inch and from 12 to 24 sections.

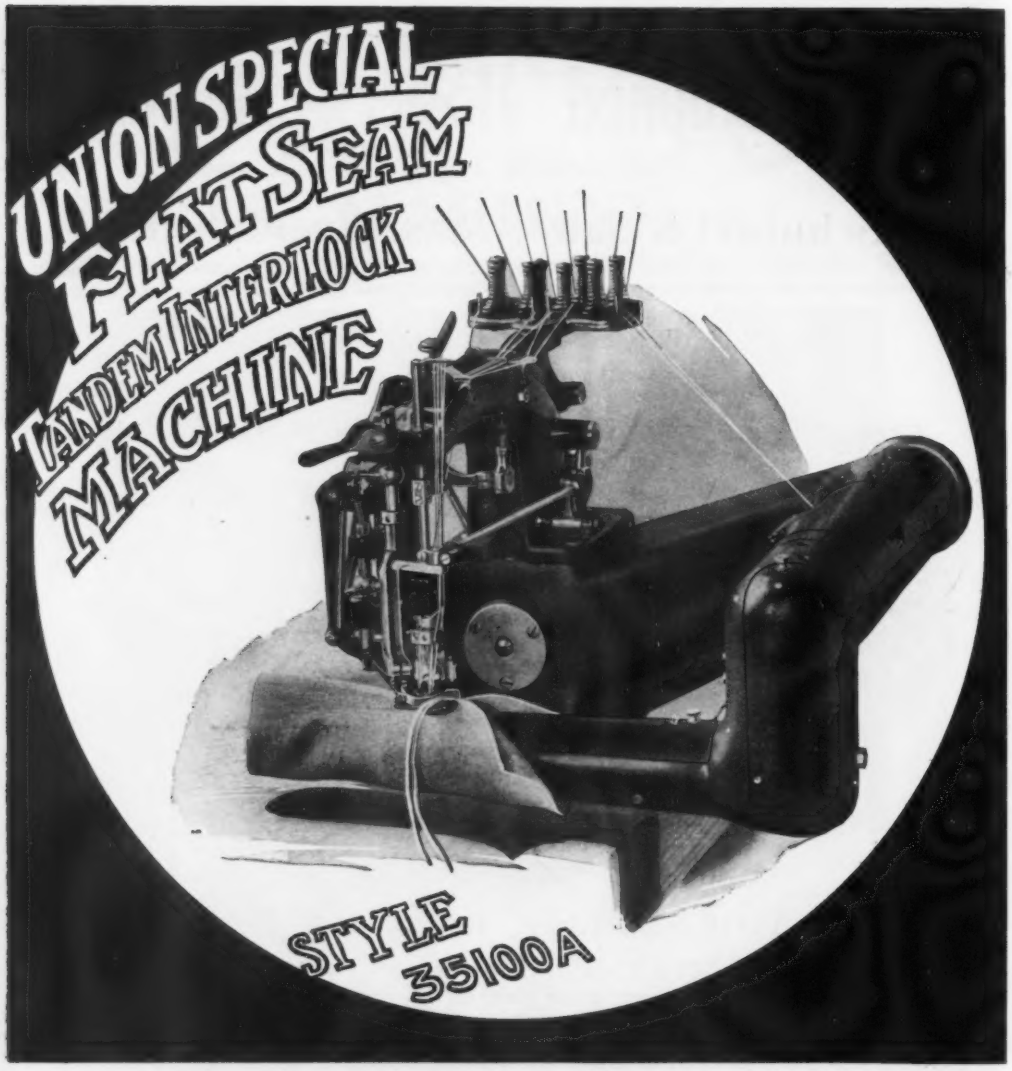
Best Constructed, Most Economical and Productive Machines on the Market

REFERENCES:

All the leading manufacturers of full-fashioned hosiery in this country.

American Representative:

OTTO WALTHER, 507 Bourse, Philadelphia



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BOARDS FOR FAST BLACK DYERS.

HOSIERY FINISHING BOARDS.

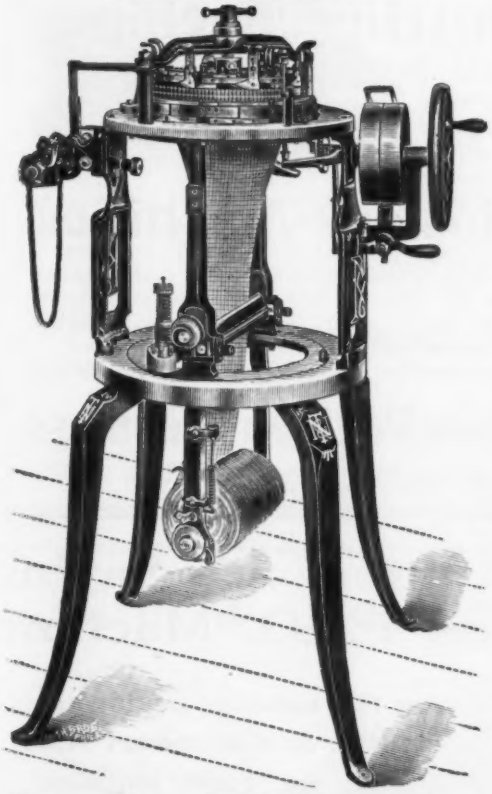
BEST WORK. PROMPT SERVICE. PRICES ALWAYS RIGHT.

JOS. T. PEARSON, 1815-21 TAYLOR ST. KENSINGTON PHILA.

Hosiery Boards

NYE & TREDICK CO.

718-720 Cherry Street
PHILADELPHIA, PA.



Circular Rib Knitting MACHINERY

For making Ribbed Underwear, Combination Suits, Sweaters, Cuffs, Shirt Borders, Hosiery, etc. Correct Construction, Excellence and Durability.

LATEST IMPROVEMENTS

Quality of Fabrics and Production
UNEXCELLED

NYE & TREDICK CO.

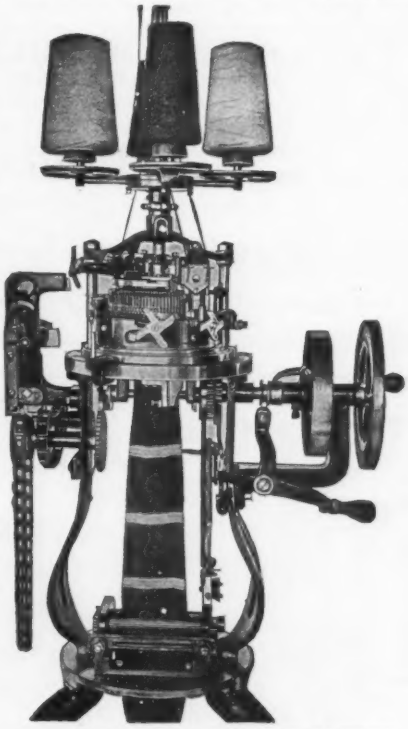
1915

CRANE MFG. CO.

Established 1870 — LAKEPORT, N. H. — Incorporated 1890

Spring and Latch Needle Machines

for Both Rib and Plain Work
Economically Producing
A GREAT VARIETY OF FABRICS



IMPROVED AUTOMATIC TOQUE MACHINE

Made in sizes from 5″ to 7″ inclusive, of any desired gauge; these measurements being back to back of cylinder needles.

These machines are built in a thorough and workmanlike manner and are second to none in the market.

The Crawford stop-motion is applied when requested

SOME CRANE FEATURES.

Patent removable hardened Wing Burr Wheels.
Patent Thread Stop Motion can be fitted to 20 in. and 40 in. frames and are specially adapted for making fine Jersey Cloth and Stockinet.
Our flat machine is adapted for knitting collarettes.

E. O. SPINDLER

350 Broadway, New York, N. Y.

AGENT FOR

"Dubied" Flat Knitting Machines

For the sweater, etc. trade

BUILT BY

EDWARD DUBIED & COMPANY, Couvet, Switzerland

AND

Full Fashioned Hosiery Machines

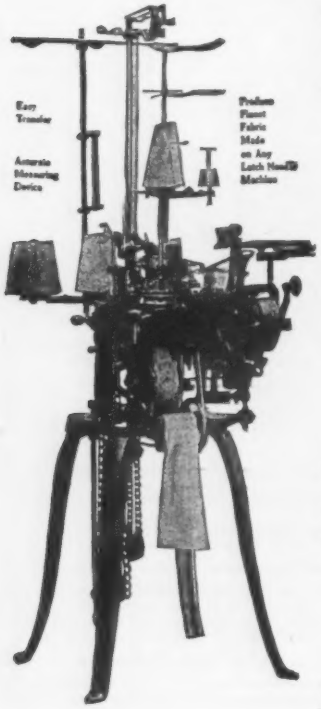
"Cotton System"

BUILT BY

DAVID RICHTER, INC., Chemnitz, Saxony

The War Doesn't Interfere With Our Business

Your inquiry will receive prompt attention



What Knitters are Saying About the "P.&O." Machine

"We are running this machine beside another popular knitter on silk and art silk plaited hosiery. On the 'P.&O.' machine we are making less menders, a more even fabric and bigger production. In fact it is the best machine we have in our mill."

SAVES 10% ON YARN

Makes Ladies' or Half Hose; garter top; no ravel, silk plaited or mercerized leg; high splice, double sole; advanced toe; linen or mercerized heel and toe.

Write for full particulars

PAXTON & O'NEILL

541 N. THIRD ST., PHILADELPHIA, PA., U. S. A.

The Reece Button-Hole Machine

For Cutting and Stitching Straight Double-Barred Buttonholes

This machine is designed for cutting and stitching straight double-barred buttonholes without eyelets, from ⅛ of an inch in length up to 1 inch, in knit goods, shirts, shirtbands, collars, cuffs, etc., also on knit goods of all kinds. It is superior to all other machines, as it is the *only single thread* buttonhole machine on the market doing away with the bobbin or under thread, thereby making a great saving in the use of thread, and *it will produce more than double the quantity of work of any other machine*, thus saving the employment of an extra operator and the space of an extra machine. The quality of the work produced is superior to any other buttonhole, from the fact that the stitch is elastic, which is an important factor in knit goods. This machine is automatic in all its movements, and is an easy machine to handle, and does not require the services of a skilled operator, no cutting or pulling of the thread required, and when the buttonhole comes from the machine, it is finished in every respect and does not require to be trimmed or cut. The length of hole required can be obtained by simply turning a screw.

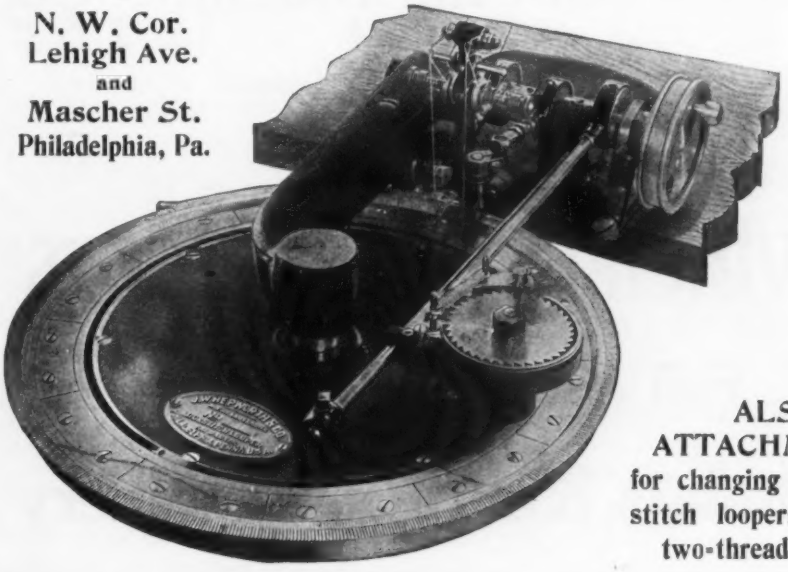
The machine is made of hardened steel drop forgings, thus reducing the breaking and wearing of parts to a minimum. *Samples of work and terms sent on application.*

THE REECE BUTTON-HOLE MACHINE CO.

Office and Factory - 500 to 514 Harrison Avenue, Boston, Mass

John W. Hepworth & Company

N. W. Cor.
Lehigh Ave.
and
Mascher St.
Philadelphia, Pa.

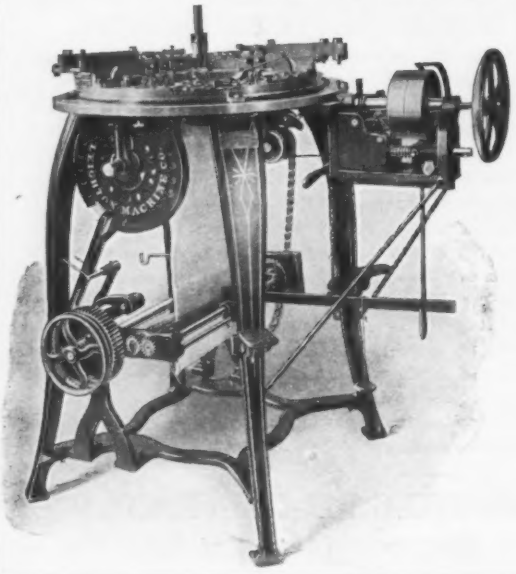


Makers of
Two Thread Elastic Lock Stitch Loopers

ALSO ATTACHMENTS
for changing our single stitch loopers into the two-thread loopers

THE LEIGHTON KNITTER

HAS EARNED THE REPUTATION OF PRODUCING



Firm, Elastic Garments

USING LOW GRADE STOCK

THESE MACHINES ARE BEING USED FOR

High Grade Goods

MORE AS COMPETITION INCREASES

Real Efficiency

Means Excellent Stitches with ECONOMICAL OPERATION

For Particulars ask

LEIGHTON MACHINE CO.

Manchester, N. H.

Jenckes Knitting Machine Co.

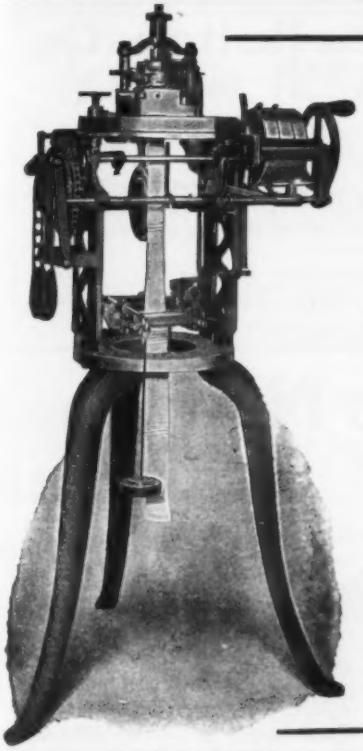
Pawtucket, Rhode Island

Manufacturers of

"INVINCIBLE" and "JENCKES"

Full Automatic Circular

Seamless Knitting Machinery



H. BRINTON COMPANY

213-217 Race Street, Philadelphia, Pa.

BUILDERS OF

Circular Knitting Machinery

of every kind for every purpose

HOSIERY RIBBERS

with Splicing, Striping, Two-speed, Selvage Welt and French Welt Attachments.

Full Automatic Hosiery Footers

BODY MACHINES, SLEEVERS, etc.

for Underwear, Sweaters, Toques, etc.

NECKTIE MACHINES

for making all kinds of tubular knitted scarfs.
Write for catalog, prices and samples.

THE MOST COMPLETE LINE OF

Sweater Coat Machines

Automatic Racking Machines with or without striping attachments.
Herring Bone Stitch Coat Machines.
Plain Sweater Coat Machines.
Pineapple Stitch Sweater Machines.
Jersey Sweater Machines.
Plain Binding Machines.
Rotary Jacquard Binding Machines.

FOR INFORMATION, ADDRESS

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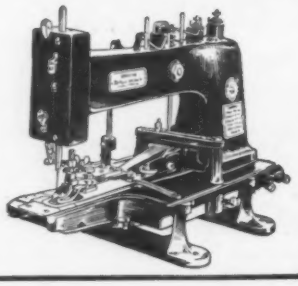
LITTLE FALLS, · NEW YORK, U. S. A.

The Elastic Stitch Keeps the Buttons On



The Elastic Stitch Button Sewing Machine successfully overcomes button sewing troubles: Because

(1) It does not pull the button down tight.
(2) It leaves an allowance for thread shrinkage
(3) Only one thread is used.
(4) There is no bobbin winding – no shuttle mechanism. No knives are used.
(5) It leaves a neat and uniform finish on EACH and EVERY button.

The simplicity of operation insures reduced expenses and increased production. Let us demonstrate these facts to you.

Send for "List-of-Users" Booklet

Union Button Sewing Co., Dept., Frederick Osann Co.

394 Atlantic Ave., Boston, Mass. Agents Everywhere 245 Seventh Ave., New York

HOW MUCH OF THIS

$10,000,000.00

DO YOU WANT?

About $10,000,000.00 worth of full fashioned stockings are made in America each year.

No matter what proportion of these millions you are now getting, you can get more of it if you will make full fashioned hosiery on our machines.

Because, the stockings you make will fit perfectly and bring you repeat orders.

The leading hosiery manufacturers are installing these machines.

If you are thinking of making full fashioned goods take up the question with us—as our success depends upon yours, we will prove to you that we can help you before you spend a cent.

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THE MAKERS OF AMERICAN FULL FASHIONED HOSIERY MACHINES

The New Boss Seamless Knitter

Do you want the biggest production with the least menders, for the least money? If so, write to the Boss Knitting Machine Works for their circular with full directions. There is no cylinder to be handled. We use only one cylinder and transfer device for half hose or ladies' hose. This machine beats them all. Has no equal for simplicity and durability. Makes 300 revolutions per minute. Built in sizes from 2¼ to 5½; from 40 to 224 needles. Automatic in heel and toe. It is the strongest built knitter on earth.

Send for prices and particulars.

THE BOSS KNITTING MACHINE WORKS,

Cor. Elm and Reed Sts., Reading, Pa.

NEW ENGLAND BUTT COMPANY

304 PEARL STREET, PROVIDENCE, R. I.

BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS

SOLID SASH AND CURTAIN CORDS

SHOE AND CORSET LACES, BANDING

AND ALL BRAIDED FABRICS

"Acme" and "Hemphill"

SEAMLESS HOSIERY

Knitting Machines

built by

Acme Knitting Machine & Needle Company

FRANKLIN, N. H.

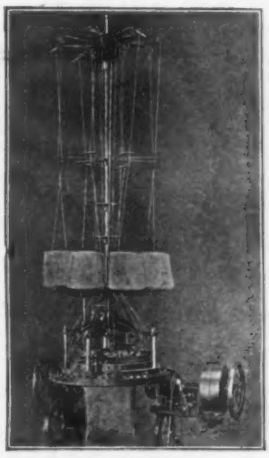
Answer all purposes in the *most reliable*, *up-to-date*, and *economical* manner. Write us for full particulars.

Manufacturers Like our Latch Needles

because we make a superior grade of needles

Philadelphia Office, Bourse Bldg.

CRAWFORD STOP MOTIONS



For all makes and sizes of

Circular Rib Knitting Machines

Twenty Years of Experience and Success

Adapted for HEAVY SWEATER yarns as well as UNDERWEAR work

Crawford Manufacturing Co.

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CHARLES COOPER

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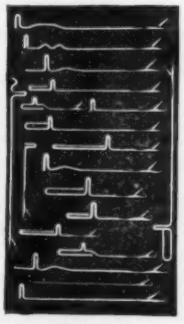

Knitting Machinery

Flat and Circular Rib, both Spring and Latch Needle, Plain Circular Machines, Lead or Trick Cylinder, **Spring Needle Cylinder Rib-Top Machines** for making Cuffs, Drawer Bottoms and Shirt Borders, **Spring and Latch Knitting Needles, Burr Wheels, Burr Blades, Sinkers, Jacks, etc.**

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"Maniplex" Sewing Machines

For Multiple Stitching

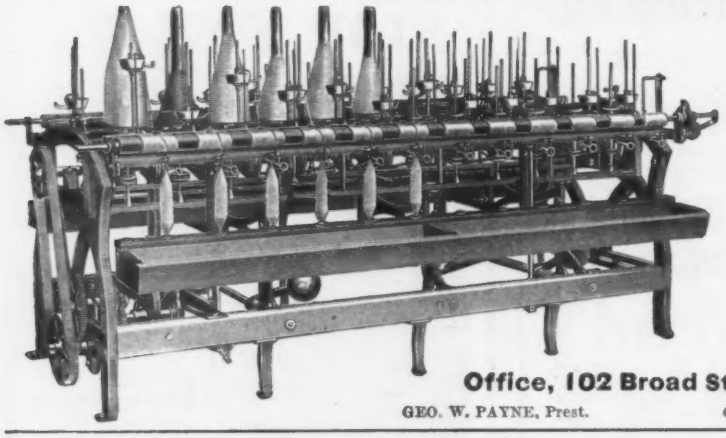
Built for all purposes where a number of rows of stitching are required. ¶With either form of stitch, single thread chain, double thread chain, or lock-stitch, sewing material from 1-16 inch thick, up to 1 inch thick, and up to 120 inch wide. ¶Furnished with any required number of needles, spacing to suit requirements. ¶We also build Paper Slitting Machines and design special machinery.

L. F. FALES

Walpole, Mass., U. S. A.

OVER 1,900 PAYNE WINDERS IN USE

By Hosiery Manufacturers, Wind for Cop, Skein or Bobbin



Improved

Upright Spoolers

To Spool from Cop, Skein or Bobbin

Doubling Spoolers for doubling 2, 3 or more ends into one

Upright Quillers, Quill from Cop, Skein or Bobbin.

Ring Dresser, Spooler and Reel Spindles, Cop Skewers, Warp, Spool, Spooler Guides. Bolsters and Stops Made and Repaired at Short Notice.

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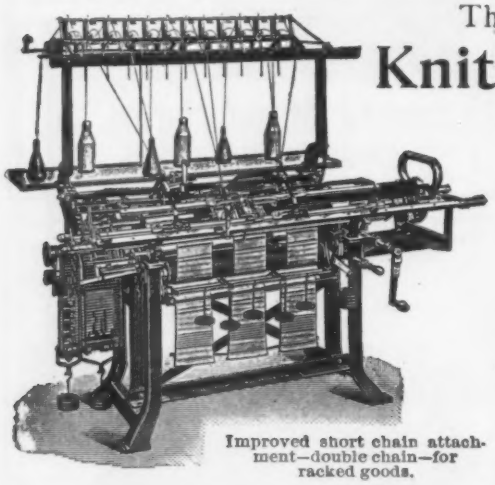
GEO. W. PAYNE, Prest. CLINTON F. PAYNE, Sec'y and Treas



Improved short chain attachment—double chain—for racked goods.

That is the Brand of the

Knitting Machines

worldwide known to be **The Best**

160,000 Knitting Machines in use all over the Universe

CLAES & FLENTJE

Muhlhausen Thr., Germany

(Largest Knitting Machine Factory in the World)

The cut represents one of our full automatic machines with double chain, short chain attachment, doing away with the long chain and lots of blocks.

Machines for all kinds of plain and fancy knit goods by hand and full automatic by power.

Our knitting machines are far superior to any other in simplicity and construction. They give a higher production than any other on the market.

For full particulars, needles and supplies for all kinds of knitting machines, write to

Ainslie Knitting Machine Co.

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New Jersey Wire Stitcher

Highest Grade

Machine for rapid and Economical Method of Attaching Labels to Hosiery or other Garments.

Uses pointed staples, cannot tear the finest fabric.

Send for Catalogue

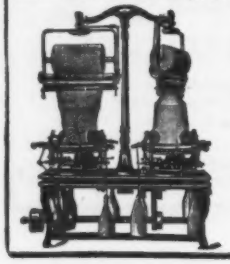
J. L. Shoemaker & Co.
15 S. Sixth Street
PHILADELPHIA

We Are the Oldest Manufacturers
IN THE WESTERN HEMISPHERE
Of Circular Spring Needle Loop-Wheel Knitting Machinery.

TOMPKINS BROS. CO., Troy, N.Y.

We submit the following extract from the sworn testimony of R. W. Gormly, in U. S. Circuit Court, Northern District of New York, in equity, No. 6764:

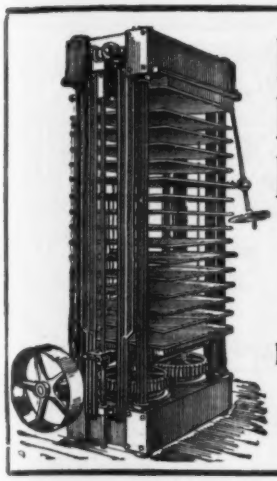
Cross Question 123. How long have you been a manufacturer of knitting machines? Answer I started in this business about the middle of May, 1900.



Tompkins Knitter

This design was adopted in 1875.

BUSINESS ESTABLISHED in 1846, before ROBERT W. GORMLEY Was born, according to his testimony in the case above cited.



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For Hosiery and Underwear Trade

For price and particulars address

Reliance Machine Works

Hedge and Plum Sts.
Frankford, Phila., Pa.

Eureka Fire Hose

Cotton Mills, Woolen Mills, Knitting Mills and Factories need positive protection instantly available. Eureka Hose gives protection.

"Eureka" has the lasting quality and the capacity to resist wear and tear.

Fire Hose for every possible duty.

Eureka Fire Hose Mfg. Co.
NEW YORK

STANDARD "G"

¶ A New Type of Hosiery Machine—being the result of 22 years of actual experience in studying the needs of the trade.

¶ Your investigation desired.

¶ Can be seen running at all times.

Standard Machine Company

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COMPRISING

Comparative Yarn Tables, showing the equivalent sizes of different systems of Numbering Yarn and Different Standards.

Weight of Yarn per Yard of Cloth Tables.

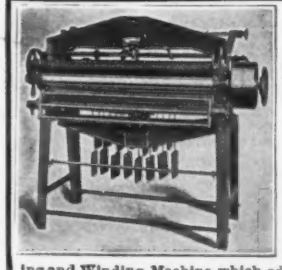
Knitting Machine Gauges. Yarn Sizes for Knitting Machines. Sizes for Underwear and Hosiery.

Breaking Strength Table of American Cotton Warp Yarns.

Compiled by the
TEXTILE WORLD RECORD

Price 50 Cents

Lord & Nagle Company, Publishers
144 Congress St., Boston, Mass.



50%

Better than ever from YOUR standpoint

Several New Features

have been added to the "1912" Cloth Cutting, Folding and Winding Machine which *add at least 50% to its value to YOU.* It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine. It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an *extra* strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to *more and greater profits.*

The Enormous Savings Will Interest You

Mail a card for complete information and prices. When in need of special machinery write me.

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NEW YORK
THE WORKMANSHIP AND QUALITY OF OUR GERMAN NEEDLES ARE UNSURPASSED OUR SCREW RIVET DOES NOT GET ROUGH OR LOOSE
LARGE STOCK OF NEEDLES FOR ALL AMERICAN AND FOREIGN KNITTING MACHINES
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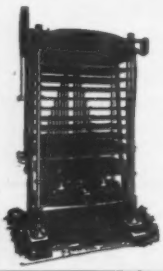
The CRAWFORD



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The most reliable machine of the kind on the market.

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Successors to

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Established 1868 **NASHUA, N.H.**

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Don't move in the same old rut all your life without ever advancing to better work or better salary. You can secure in your own home, in your spare time, and without leaving your present work, the most powerful force for promotion in the world. Thousands have obtained increased earnings through the I. C. S. Write us a postal today, stating the position you would like to obtain. Advice of experts and booklet free.

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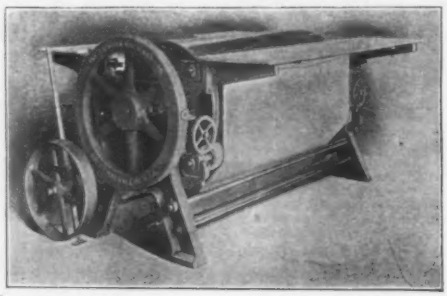

You know that the greatest factor in earning power is a capacity that reduces the cost of production. Therefore we want you to know that

THE J. W. CRAW PRESS

excels all others in capacity.

Capacity and Finish

With **two** girl operators its record capacity is pressing **six hundred dozen** garments per day **without breaking a button.** With only **one** operator it is **three hundred dozen** per day.

The appearance of the garment when pressed on it is very attractive; the finish cannot be excelled; **many mills say it cannot be equalled** by any press or method of pressing.

Sizes to meet your requirements. Terms to suit your convenience. Write us for prices and terms.

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Domestic Machinery Works

WOLFGANG RICHTER, Prop.

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Full Fashioned Knitting MACHINES

We are rigged up to do anything from a knocking over bit to a finished Cotton frame. Also repair and change machines from the coarsest to the finest gauge.

Correspondence solicited

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INCORPORATED

Highland Park, Conn.

Manufacturers of

RAG PRESS BOARDS

Especially Adapted to

Hot Pressing

Also

Fender Boards

Medals awarded at Paris and Melbourne Expositions.

Jacquard Cards of all Grades for Fancy Weaving. Accurately Cut to Any Size.

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Largest Manufacturers of Machine Needles in the World

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Excelsior Sewing Machine Needles

Highest Quality Crucible Wire Perfect Points
Smooth Eyes—Finest Temper—Hand Straightened

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The Best Hosiery Needles in the market

Manufactured by

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Established 1874. Manufacturers of all kinds of

SPRING KNITTING NEEDLES

Slides, Sinkers, Jacks, Etc.

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WM. BREEDON'S SON

MANUFACTURERS OF

Spring Knitting Needles

AND BURR BLADES OF ALL KINDS

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JOHN C. EGLY, Mgr. Manufacturers of

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Needles for all makes of Knitters and Ribbers
Keystone Spring Bottom Needles for all makes of Knitting Machines always in stock for immediate delivery.
Special Needles made to order.

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This school is located in New Bedford, Mass., a rapidly growing city and already the largest producer of fine cotton goods in this country.

Instruction given in the theory and art of cotton manufacture in all its branches.

The school has one hundred ten machines for instruction purposes in carding, spinning and weaving departments; seventy in knitting department, the most complete department of the kind in equipment and scope of instruction in this country; twenty-seven machines in machine shop; thoroughly equipped departments in chemistry and dyeing, in designing, and mechanics.

Every instructor a man of broad experience and training.

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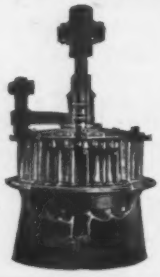

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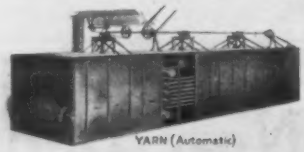

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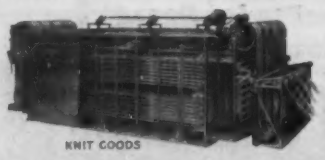

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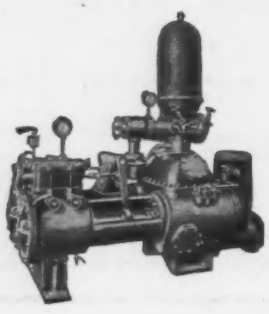

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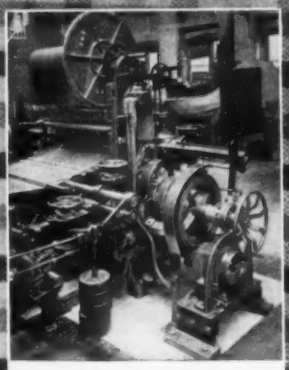

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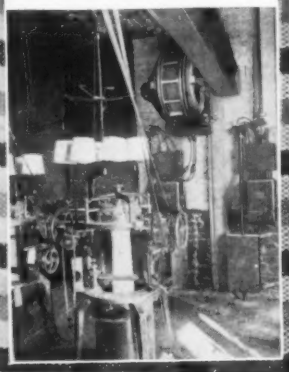

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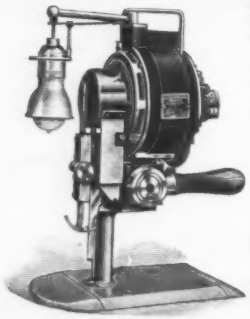

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